AMERICAN GAS

Association

MONTHLY

UNE 1945 · VOL. 27 · NO. 6

You worry...

How will you put your new post-war kitchen together? Will the stove stick out past the cupboards . . . will the refrigerator poke out past the sink? Naturally, you don't want to spoil that streamlined look!

We work...

The whole Gas industry is busy solving these problems for you...working with cabinet men and gas appliance people...so that everything you want for your particular kitchen will fit and harmonize perfectly!

But there's even more in store for you in the "New Freedom Gas Kitchens"*! They're going to be scientifically designed to cut out unnecessary steps, fatigue, dirt, heat—yes! even lingering kitchen odors!

Shortly after V-day, dozens of new ideas on these "New Freedom Gas Kitchens" will be ready . . . one just right for your size house, your size family, your size purse.

and tomorrow it's yours!

ANOTHER "NEW FREEDOM GAS KITCHEN" DESIGN

More fun, more freedom for every woman who cooks!

Here are the "musts" in planning a really modern workshop—"musts" that every "New Freedom Gas Kitchen" will feature! **A RANGE THAT'S TOPS IN COOKING PERFECTION**...Whatever "make" of gas range you buy, you can be sure of getting the very latest and finest in Gas cooking appliances when it carries the CP seal. **FOOD STORAGE—PLUS**... Your post-war Gas refrigerator will not only be silent, roomier ...but will keep more foods fresh longer... save you hours of marketing time. **BETTER-THAN-EVER AUTOMATIC WATER HEATING**...Your new Gas hot water system will be economical, efficient, completely automatic... will bring you gallons of hot water whenever you want it at the turn of the tap! Start planning *today* for your "New Freedom Gas Kitchen" of tomorrow!

CP

GAS

THE WONDER FLAME THAT COOLS AS WELL AS HEATS

AMERICAN GAS ASSOCIATION

*Copyright 1945, American Gas Association

The inner workings of the mechanism set up to administer the gas industry's great development fund is revealed in the leading article in this issue. John West, who of all the A. G. A. staff was perhaps closer to the campaign to raise the fund and who acts as liaison officer between the various interested parties, gives a complete story of its operation. It's recommended reading, providing as it does an apt example of industry progress through teamwork in a national trade association. . . . In the next article, Jim Gorton, A.G.A.E.M.'s CP range manufacturers' front man, does a bit of plain and fancy balloon-puncturing—mostly at the expense of our electric range friends. The latter, Jim points out, have been doing statistical sleight of hand performances to get the so-called evidence of an electric trend in the home cooking field. It just ain't so, except in wishful thinking, as figures show electric cooking has hardly dented the real gas-served territory despite its big treasure chest. . . . Speaking of kitchens, that double-page spread of English culinary departments is substantial evidence of a renaissance for Britain's stout-hearted womenfolk.

EDITORIAL OFFICES:
AMERICAN GAS ASSOCIATION
420 LEXINGTON AVE., NEW YORK 17, N. Y.

CONTENTS FOR JUNE 1945

FEATURES

DEVELOPMENT PLAN GAINS MOMENTUM—by John W. West, Jr. . 247
POSTWAR GAS RANGE HORIZON—by James I. Gorton . . . 253
SAGA OF A FRONTIER FUEL—NATURAL GAS—by H. J. Hense . . 257
ENGLAND SPOTLIGHTS THE KITCHEN 260
A. G. A. STATISTICAL PROGRAM—by Irvin Dunston 262
SCIENTIFIC SALES TALENT SELECTION—by C. F. Cushing . . . 264
ECONOMICS OF GAS HOUSE HEATING (PART III)—by Hall M. Henry 267

SECTIONS

A PUBLIC UTILITY CREDIT POLICY—by J. Gordon Ross 277
GUIDEPOSTS FOR DEALER COOPERATION 279
INFRA-RED VERSUS CONVECTION HEATING—by Charles C. Eeles . 281
THE HOW AND WHEN OF APPLIED SAFETY—by Dr. Rupert L. Cortright 287
APPROVAL REQUIREMENTS FOR HIGH ALTITUDE 291

DEPARTMENTS

INDUSTRIAL AND COMMERCIAL ADVERTISING 285
AFFILIATED ASSOCIATION ACTIVITIES 292
PERSONAL AND OTHERWISE 296
CONVENTION CALENDAR 296
OBITUARY 297
PERSONNEL SERVICE 300

● Subscription $3.00 a year - Published eleven times a year by the American Gas Association, Inc. Publication Office, American Building, Brattleboro, Vt. Publication is monthly except July and August which is a bi-monthly issue. Address all communications to American Building, Brattleboro, Vermont, or to 420 Lexington Ave., New York 17, N. Y. All manuscript copy for publication should be sent to the editorial offices in New York. The Association does not hold itself responsible for statements and opinions contained in papers and discussions appearing herein. Entered as Second Class Matter at the Post Office at Brattleboro, Vermont, Feb. 10th, 1922, under the Act of March 3, 1879. Cable addresses: American Gas Association, "Amerigas, New York"; American Gas Association Testing Laboratories, "Amerigaslab, Cleveland."

JAMES M. BEALL, *Editor*

Development Plan Gains Momentum

BY JOHN W. WEST, JR.

Assistant Managing Director, American Gas Association

EVERYBODY seems very much interested today in knowing just how the Association's new Research and Promotional Plan is being operated. The 250 subscribing companies want to know how soon the committee in charge will be able to put the plan into full operation and how much will be accomplished during the remainder of the first year. The companies which have not yet subscribed are also interested in the question of effective administration; possibly if they felt more certain on this point they might also become subscribers. The purpose of this paper is to tell you how this new plan is being meshed into the operating picture of the American Gas Association.

•

The setting up of a new fund for special purposes is nothing new to the Association. Until recently we were like all Gaul—divided into three parts. We had three main funds—Now we have four.

The financial history of the Association is really the story of the setting up of such funds at intervals of five or ten years, linked together by periods of growth or decline in membership dues reflecting the business done by company members.

In order to show how this new fund is being operated, it is necessary to describe the other three with which it is linked. First came the General Fund representing the annual company membership dues. (See Chart I) This began in 1918 when, due largely to the individual initiative of the late George B. Cortelyou, the Association was created from a merger of the previous national gas engineering and gas sales organizations.

For the first year, this General Fund ran about $90,000 covering activities in the fields of technical, sales, accounting, publicity and advertising for the benefit of the gas industry.

Address presented before Indiana Gas Association, May 3, and Gas Meters Association of Florida-Georgia, May 18, 1945.

Six years later there was a lot of talk in the United States about unsafe gas appliances, by the government as well as the gas industry. As a result, about 100 gas companies put up approximately $127,000 to establish an appliance testing and research laboratory at Cleveland. (See Chart II). The late Harry C. Abell of Electric Bond & Share Co., then president of the Association, was a leader in this move. It is important to note that if this had been financed by raising dues, it would have required an increase of about 50%.

The first thing the new Laboratory did was to carry on certain research work to determine what approval requirements should be set up to insure that gas appliances would have a high degree of safety in operation. I remember that the subject of flexible gas tubing came first. The Executive Board has always felt that the cost of Approval Requirements Research should be borne from the dues received from gas utility companies. This year $53,000 is provided for this purpose from the Association's General Fund. During the first full production year after victory, we estimate receipts from 400 manufacturers for appliance testing and inspection will run about $300,000.

•

It is likely that the major part of the $150,000 available annually for Domestic Gas Research will be expended at the A. G. A. Laboratories and that about $20,000 of Industrial and Commercial and General Technical Research will also be prosecuted there, giving estimated annual revenues of $500,000 during a typical postwar year.

The administration of the Laboratories Fund and the operation of the Laboratories is handled by one administrative committee, one administrative employee and 8 Laboratories' staff members. There are 35 operating committees with 225 members, and a total of 150 Laboratories' employees. These are all directly responsible to the Executive Board of the Association and to the 400 individual manufacturers who

• Opposite: Unusual view of barometric condensors for condensing exhaust steam from turbines of water gas exhausters. This is one of a number of photographs exhibited by The Philadelphia Gas Works Co. at The Franklin Institute in April.

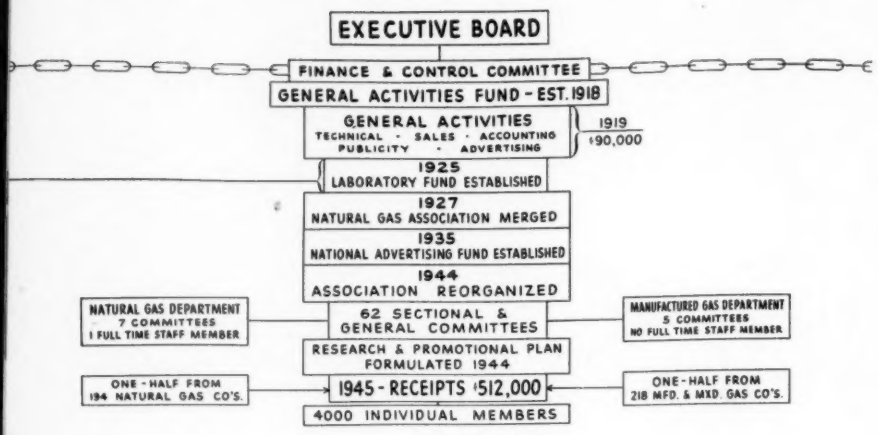


Chart I

submit appliances for approval.

The Natural Gas Association of America contributed $2,500 toward the cost of setting up the new A. G. A. Laboratory. Perhaps while it was testing gas appliances for the safe use of natural, manufactured and mixed gases, the Laboratory also served as a common meeting ground and uniting force among the natural and manufactured gas companies. In any event, in 1927 the Natural Gas Association of America was merged with the American Gas Association, bringing into membership some 80 natural gas companies in addition to those which had been members of the Association before the merger, and making it the single national gas trade association. In this move Ralph W. Gallagher, now chairman of the board of Standard Oil Co. of N. J. and N. C. McGowen, then president of the Natural Gas Association of America, took leading parts although many others gave ardent support. Then came the great depression with its headaches for everybody, and in the middle of it a Lochinvar from the West by the name of Jim Pollard of Seattle electrified the 1935 gas convention into subscribing $457,000 to a National Advertising Program. (See Chart III) To have financed this program from company membership dues would have required a 100% increase. Instead, voluntary subscriptions were solicited from members and nonmembers alike, by a committee which assumed the direct responsibility for administering the new fund along effective advertising lines. That program started as a 3-year plan and has been going on for nine years.

Meanwhile, the natural gas industry had been making tremendous strides in its service to the public and this was reflected in its rapid growth during the previous 15 years. In 1944 a conviction arose among the natural gas men that their branch of the industry was inadequately served by having a Natural Gas Section within the Association.

J French Robinson, our president, lead in bringing about a reorganization which gives us a Natural Gas Department with 7 departmental committees and a full-time director who is also an assistant managing director of the Association, handling matters of special interest to natural gas companies; a Manufactured Gas Department with 5 committees handling matters of special interest to manufactured and mixed gas companies, and 62 sectional and general committees handling matters of joint interest to all gas company members.

The net result of these mergers, reorganization and general activities of the Association on behalf of its members, is reflected in the fact that membership dues, represented by the General Fund, are estimated at $512,000 for the present Association year. About one-half of this comes from natural gas and pipeline members and one-half from manufactured and mixed gas members. The Finance & Control Committee has direct responsibility for this general fund under the direction of the Executive Board, which is responsible to members.

Somehow or other these Westerners have a way of their own of starting new industry-wide programs. Shortly after Mr. Acker became president of the Association in the Fall of '43, another Lochinvar from the West, in the person of Paul B. McKee of Portland, Oregon came East to present his ideas about the research and promotional needs of the industry.

Mr. McKee found not only a ready listener, but a prompt actor. After discussion at two meetings of the Executive Board, President Acker was authorized to appoint a committee to prepare an industry plan for research and promotional development.

Our "San Francisco Conference"

Our "San Francisco Conference" to promote the collective security of the gas industry took place last June in Chicago. During the morning, industry specialists in the fields of advertising, promotion and research presented their recommendations about the scope of the industry's needs and, as was to be expected, their scope was plenty wide. Mr. McKee recommended an over-all program requiring three million dollars a year. Some said that the industry needed a national advertising and radio program of 2¼ million dollars annually. Others recommended a program of a million dollars a year for manufactured gas production research alone.

The afternoon was spent in securing the opinions and recommendations of executives representing nearly 50% of the industry which would have to put up the money.

After we had listened to the many opinions, I thought how parallel the process was to the one described a few months earlier by Cordell Hull when he spoke on methods of promoting collective security. He said, "It is obvious, of course, that no matter how brilliant and desirable any course may seem, it is wholly impracticable and impossible unless it finds basic acceptance, not only by our Allies, but by the people of this country, and the Legislative branch of this government which, under our Constitution, shares with the Executive the power and responsibility for final action.

The only practicable course is to begin by obtaining agreement, first upon broad principles, setting forth direction and general policy. This is a procedure in which the people, who are sovereign, must not only educate their servants, but must be willing to be educated by them."

The Special Committee found that the needs for collective research and development were so large that it would not be possible to finance them from membership dues without trebling the scale of dues. The plan was presented to the industry generally last October and, with the help of a new and smaller committee under the chairmanship of Mr. Acker, voluntary subscriptions in the gross amount of $1,400,000 were completed in 90 days. (See Chart IV)

The completion of this fund is not only a proof of how well the committee had laid its plans to meet the needs common to the majority of the gas companies, it is also a vote of confidence by those companies that the Association is responsive to their needs and a mandate of new duties and responsibilities which we at headquarters accept with full confidence.

I think that the completion of the fund also proves that the industry was never more united and of a mind to build its own future than now. The fact that natural gas companies are contributing $80,000 a year toward the cost of carrying on manufactured gas production research with its admittedly indirect benefits to them, serves to confirm that belief.

These four major funds are the life blood of the Association. Of them, the General Fund is the blood plasma that keeps the Association alive. But it is well to remember that although the Association has these funds, we are not a funded or endowed organization in any sense of the word. Every year we have a referendum when each company decides whether to remain a member of the Association, and whether to continue to contribute to this fund or to that one.

The committee decided to make full use of established Association committees, and to set up new committees and bureaus only where these were essential in the belief that this would provide the greatest coordination and least overlapping of activities and the minimum of administrative expenses. Only direct out-of-pocket expenses incurred by the Association as the result of the new plan are being charged to the new fund.

The committee decided that a fully effective National Advertising Program would require a minimum of $800,000 a year. (See Chart III) To reach this goal, which involved doubling the current program, the committee decided to raise $600,000 from gas companies, and to urge the appliance and equipment manufacturers to put up another $200,000. This request seemed very modest in view of the fact that the National Advertising Program over the last nine years has been necessary only because gas appliances have not been advertised sufficiently to meet competition. The joint committee of the A.G.A.E.M. and A. G. A. already has received subscriptions from 150 manufacturers totalling $160,000 for these purposes.

Despite all of our best efforts some gas companies chose not to go in on the

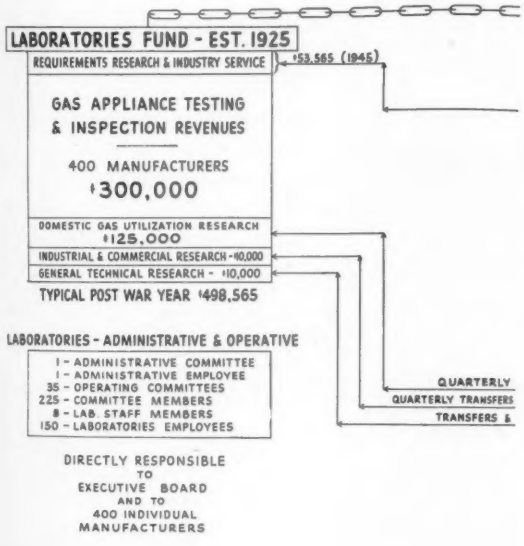

LABORATORIES FUND - EST. 1925
REQUIREMENTS RESEARCH & INDUSTRY SERVICE
$53,565 (1945)
GAS APPLIANCE TESTING & INSPECTION REVENUES
400 MANUFACTURERS
$300,000
DOMESTIC GAS UTILIZATION RESEARCH $125,000
INDUSTRIAL & COMMERCIAL RESEARCH - $40,000
GENERAL TECHNICAL RESEARCH - $10,000
TYPICAL POST WAR YEAR $498,565
LABORATORIES - ADMINISTRATIVE & OPERATIVE
1 - ADMINISTRATIVE COMMITTEE
1 - ADMINISTRATIVE EMPLOYEE
35 - OPERATING COMMITTEES
225 - COMMITTEE MEMBERS
8 - LAB. STAFF MEMBERS
150 - LABORATORIES EMPLOYEES
QUARTERLY
QUARTERLY TRANSFERS
TRANSFERS &
DIRECTLY RESPONSIBLE TO EXECUTIVE BOARD AND TO 400 INDIVIDUAL MANUFACTURERS

Chart II

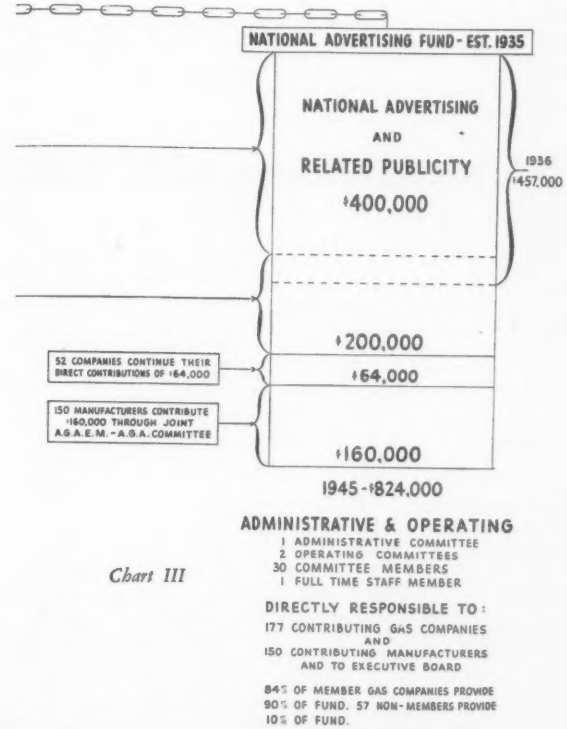

NATIONAL ADVERTISING FUND - EST. 1935
NATIONAL ADVERTISING AND RELATED PUBLICITY
$400,000
1936 $457,000
$200,000
52 COMPANIES CONTINUE THEIR DIRECT CONTRIBUTIONS OF $64,000
$64,000
150 MANUFACTURERS CONTRIBUTE $160,000 THROUGH JOINT A.G.A.E.M. - A.G.A. COMMITTEE
$160,000
1945 - $824,000
ADMINISTRATIVE & OPERATING
1 ADMINISTRATIVE COMMITTEE
2 OPERATING COMMITTEES
30 COMMITTEE MEMBERS
1 FULL TIME STAFF MEMBER
DIRECTLY RESPONSIBLE TO:
177 CONTRIBUTING GAS COMPANIES AND
150 CONTRIBUTING MANUFACTURERS AND TO EXECUTIVE BOARD
84% OF MEMBER GAS COMPANIES PROVIDE 90% OF FUND. 57 NON-MEMBERS PROVIDE 10% OF FUND.

Chart III

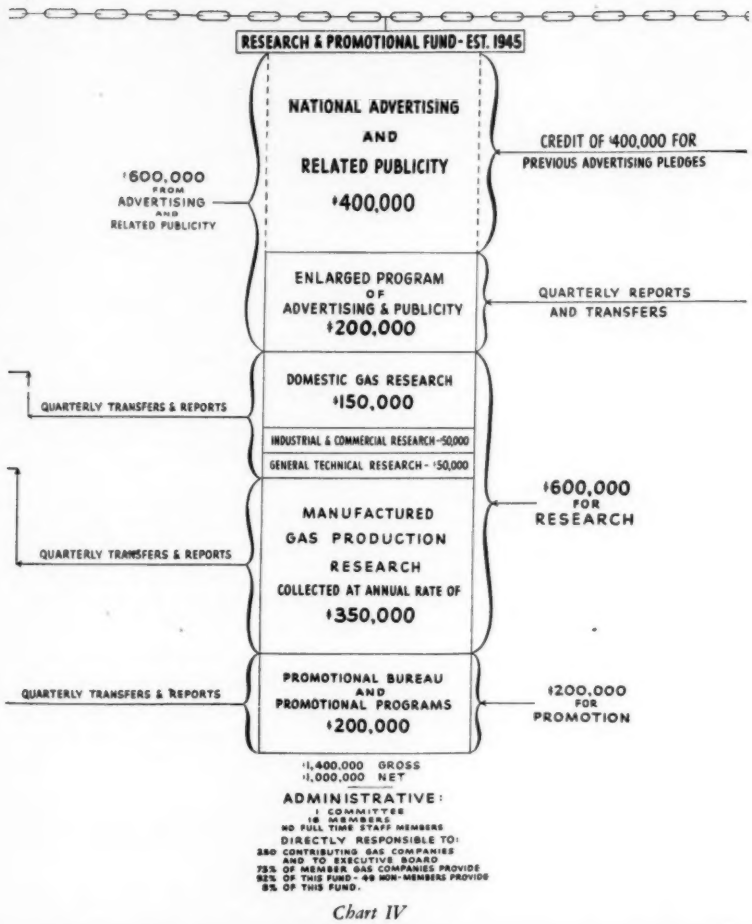

RESEARCH & PROMOTIONAL FUND - EST. 1945
NATIONAL ADVERTISING AND RELATED PUBLICITY
$400,000
$600,000 FROM ADVERTISING AND RELATED PUBLICITY
CREDIT OF $400,000 FOR PREVIOUS ADVERTISING PLEDGES
ENLARGED PROGRAM OF ADVERTISING & PUBLICITY
$200,000
QUARTERLY REPORTS AND TRANSFERS
DOMESTIC GAS RESEARCH
$150,000
QUARTERLY TRANSFERS & REPORTS
INDUSTRIAL & COMMERCIAL RESEARCH - $50,000
GENERAL TECHNICAL RESEARCH - $50,000
$600,000 FOR RESEARCH
MANUFACTURED GAS PRODUCTION RESEARCH
COLLECTED AT ANNUAL RATE OF
$350,000
QUARTERLY TRANSFERS & REPORTS
PROMOTIONAL BUREAU AND PROMOTIONAL PROGRAMS
$200,000
QUARTERLY TRANSFERS & REPORTS
$200,000 FOR PROMOTION
$1,400,000 GROSS
$1,000,000 NET
ADMINISTRATIVE:
1 COMMITTEE
18 MEMBERS
NO FULL TIME STAFF MEMBERS
DIRECTLY RESPONSIBLE TO:
280 CONTRIBUTING GAS COMPANIES AND TO EXECUTIVE BOARD
73% OF MEMBER GAS COMPANIES PROVIDE
82% OF THIS FUND - 49 NON-MEMBERS PROVIDE 8% OF THIS FUND.

Chart IV

larger plan, and there are 52 which continue to contribute $64,000 a year directly to the National Advertising Committee and make no contribution to the Research and Promotional Plan.

Thus the National Advertising Fund is assured for the present year of total receipts of $824,000. This program is handled by one administrative committee headed by H. Carl Wolf and by two operating committees. Quite recently, Mr. Person, the Association's advertising director, has been assigned full time to this work. The National Advertising Committee is directly responsible to the 177 gas companies and 150 manufacturers which contribute to it. The committee's yearly advertising program is subject to approval of the Special Committee in charge of the new Research and Promotional Fund which receives quarterly progress reports as a basis for the transfer of funds during each succeeding quarter, up to a maximum of $200,000 for the year.

As to the $250,000 provided annually for all types of industry research except gas production, the conduct of the projects is generally supervised by the Association's Coordinating Committee on Research. (See Chart V). The assignment of these projects to the best-qualified research agencies and the direct supervision of each project to completion is carried on by the Domestic Gas, the Industrial and Commercial Gas Committees and by the Departmental, Sectional and General committees which have jurisdiction over general technical research problems. There are nine of these committees with 134 members.

Once approved for the ensuing year, each project is the subject of quarterly progress reports to the Fund Committee and the same procedure is required of the research agency by the committee in charge.

The committee has authorized a substantial number of projects and activities in the field of research and advertising since the fund was completed. The committee is anxious to accomplish as much as possible before the end of the fiscal year but no effort is being made to spend the full fund simply because it is available.

Ninety-eight thousand dollars has been authorized for domestic gas research projects in cooking, water heating, space heating, venting when no chimney connections are available, gas burner work and the preparation of papers in lieu of technical conferences. Industrial and commercial work on the application of forced combustion to commercial cooking and baking equipment, investigation of plug-in flexible connections and improvements in non-ferrous metal melting by direct radiant gas heat have been authorized in the amount of $17,000. Participation in a cooperative research project of the American Society of Heating and Ventilating Engineers for establishing reliable data on friction losses through air distribution ducts, and a survey of water problems encountered in gas summer air conditioning, have been authorized in the amount of $8,500.

General technical research authorized on controlling and gauging combination oil-gas wells, an investigation of natural gas hydrates, mixed gas research and the development of standard test burners, organic sulphur and iron corrosion research represent another $22,000. These projects total $145,500 for the fiscal year ending September 30, 1945.

The research committees have under consideration a number of other projects such as pilot design; construction and performance; gas-operated summer-winter hookups; home humidity control; development of an all-purpose gas cooking machine; advanced studies in high speed direct heat treating and of various types of heat rays for transmitting heat and penetrating materials both at high and low temperatures.

Two new committees have been set up within the Manufactured Gas Department to formulate a program of gas

production research, to select the best qualified research agencies and be responsible for the conduct of these activities so directly important to the manufactured and mixed gas companies. A specially qualified secretary-coordinator has been employed at headquarters to devote his full-time to the prosecution of this work.

In the field of gas production, projects on the catalytic gasification of propane and of higher hydrocarbons, research on sulphur resistant catalysts, a study of the reactions between oxygen, steam and carbon at temperatures and pressures different from those commonly used, an investigation of low-cost methods of increasing capacity of and economy in existing gas production equipment, the flash pulverization and the flash gasification of coal, have all been authorized for prosecution at the Institute of Gas Technology, totalling the sum of $81,800.

In addition, the Battelle Memorial Institute will conduct research on the reactions of oxygen, steam and carbon along certain special lines at a cost of $22,400, making a total of $104,200 authorized or approved to date in the field of gas production. Again the advisory and operating committees in charge of this work are expected to present additional projects for authorization before the end of the year.

The National Advertising Committee has inaugurated an expanded national magazine advertising program, which despite the difficulty in securing space, represents an increase of 66% over its previous program due to the utilization of 4-color advertisements and more space.

During 1944 the 5 largest women's and home magazines carried 2½ times as much advertising of electric appliances as was carried by the gas appliance manufacturers and the A. G. A. campaign on directly competing gas appliances. Even with no increase in this electrical advertising, doubling our present campaign will cut this ratio only to 2-to-1, still leaving a tremendous gap to be filled by the gas industry.

When it came to putting into effect an enlarged sales promotional program a different tack had to be followed. In this field, the Association has two active Sections with annual expenditures that normally total about $50,000. What is needed is a set-up which will coordinate the promotional work of the gas utility companies, the gas appliance manufacturers and manufacturers of related appliances, one with another, by means of industry-wide promotional programs.

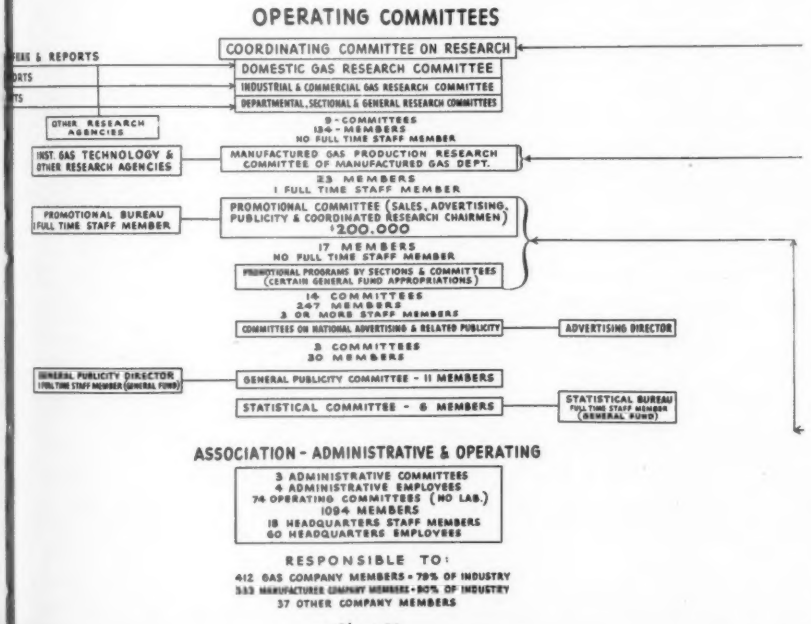

OPERATING COMMITTEES
COORDINATING COMMITTEE ON RESEARCH
DOMESTIC GAS RESEARCH COMMITTEE
INDUSTRIAL & COMMERCIAL GAS RESEARCH COMMITTEE
DEPARTMENTAL, SECTIONAL & GENERAL RESEARCH COMMITTEES
OTHER RESEARCH AGENCIES
9 - COMMITTEES
134 - MEMBERS
NO FULL TIME STAFF MEMBER
INST. GAS TECHNOLOGY & OTHER RESEARCH AGENCIES
MANUFACTURED GAS PRODUCTION RESEARCH COMMITTEE OF MANUFACTURED GAS DEPT.
23 MEMBERS
1 FULL TIME STAFF MEMBER
PROMOTIONAL BUREAU (FULL TIME STAFF MEMBER)
PROMOTIONAL COMMITTEE (SALES, ADVERTISING, PUBLICITY & COORDINATED RESEARCH CHAIRMEN)
$200,000
17 MEMBERS
NO FULL TIME STAFF MEMBER
PROMOTIONAL PROGRAMS BY SECTIONS & COMMITTEES (CERTAIN GENERAL FUND APPROPRIATIONS)
14 COMMITTEES
247 MEMBERS
3 OR MORE STAFF MEMBERS
COMMITTEES ON NATIONAL ADVERTISING & RELATED PUBLICITY
ADVERTISING DIRECTOR
3 COMMITTEES
30 MEMBERS
GENERAL PUBLICITY DIRECTOR (FULL TIME STAFF MEMBER (GENERAL FUND))
GENERAL PUBLICITY COMMITTEE - 11 MEMBERS
STATISTICAL COMMITTEE - 6 MEMBERS
STATISTICAL BUREAU (FULL TIME STAFF MEMBER (GENERAL FUND))
ASSOCIATION - ADMINISTRATIVE & OPERATING
3 ADMINISTRATIVE COMMITTEES
4 ADMINISTRATIVE EMPLOYEES
74 OPERATING COMMITTEES (NO LAB.)
1094 MEMBERS
18 HEADQUARTERS STAFF MEMBERS
60 HEADQUARTERS EMPLOYEES
RESPONSIBLE TO:
412 GAS COMPANY MEMBERS - 78% OF INDUSTRY
333 MANUFACTURER COMPANY MEMBERS - 80% OF INDUSTRY
37 OTHER COMPANY MEMBERS

Chart V

During a normal year the gas utility industry spends about $20,000,000 for promotion and advertising of all kinds. Information on appliance manufacturers expenditures is incomplete, but it may represent 3% of their business or an additional $6,000,000. It is evident that the industry cannot hope to conduct a national promotional program for $250,000 that will match the promotional expenditures and meet the competition of concerns like General Electric. Instead the principal objective will be to coordinate the sales efforts of our gas companies and manufacturers into a cohesive force for increased sale of gas and gas appliances. It is equally evident that even if their effectiveness is increased by as little as 10%, its cost will have been repaid many times. Here the plan provides for the setting up of a new Promotional Committee representing all established sales, advertising, publicity and research groups which will have general responsibility for all of these Association activities, and for the setting up of a Promotional Bureau with a qualified director at headquarters.

Hulcy Directs Promotion

D. A. Hulcy of Dallas is chairman of this Promotional Committee and, following a meeting on May 21, it is expected that the promotional director soon will be adequately staffed. Not much can be done along direct promotional activities at the moment, but a great deal can and must be done in preparing a coordinated program by the gas industry and all its elements.

One of the objectives of the new plan was to relieve the General Fund of the Association of the cost of conducting the limited amount of research, and thus permit strengthening certain basic Association activities such as general publicity on behalf of the industry and the restoration of the Association's Statistical Bureau. The need for adequate industry statistics became so pressing that the Executive Board approved the restoration of that work without awaiting the completion of the new fund.

A director of general publicity has been engaged at headquarters and the employment of a publicity man on industrial and commercial gas is being arranged. Other changes are pending.

Thus, without regard to the pending

promotional activities and bureau, the Plan Committee has authorized during the past 2 months the expenditure of a maximum of $450,000 for research and advertising activities out of the net available fund of $1,000,000. Any unexpended balances remaining at the end of the year will be held for similar purposes unless it is the expressed desire of the contributors that some reallocation be made.

The Special Committee responsible for the administration of the new fund is composed of 16 members, including the president, the treasurer of the Association, the vice-presidents in charge of the Natural and Manufactured Gas Departments, and the chairman of the Finance and Control Committee, who serve as ex-officio members. The members are all executives who consider themselves directly responsible to the 250 contributing gas companies.

Every invoice to be paid from any of these funds must be approved by the chairman of the committee in charge of the project involved, and each voucher must be signed by the chairman of the fund involved. Linking together financially the expenditures from all of the funds is the Finance & Control Committee which must approve all the vouchers thus minimizing the possibility of overlapping of expenditures.

To summarize the picture for the Association as a whole (See Chart V) there are 3 administrative committees with 4 administrative employees, and 74 operating committees with 1094 members, which together with 18 headquarters' staff members and a total of 60 employees, are responsible for making all of these activities helpful to 412 gas company and 333 manufacturer company members. It is the function of the Executive Board to harness these four programs into a sustained common effort and to keep that effort headed in the right direction as a strategic force for the gas industry.

I think you will agree that the arrangements made for the effective administration of the new fund and its coordination with other Association funds and activities have been careful and comprehensive. This is vitally important but it is not the only thing essential for success. Alexander Pope once said "for forms of government, men like fools contest; whatever is best administered, is best." This is another way of saying that the industry's success depends in the last analyses upon the wisdom and stature of the men who comprise it. A very important part of our individual jobs at headquarters is to secure the best available men for committee membership and particularly for officers and committee chairmen. Whatever record of achievement the Association has made during the past 27 years has been largely due to the extent it has been able to attract and employ the voluntary efforts of capable men and women to head up its principal committees and serve as members.

So when you think in either a critical or complimentary manner of the American Gas Association and the way it is handling your money, it is well to remember that your Association is neither the headquarters' staff alone, nor the Executive Board and the committees alone, but that both are the targets for your bricks or flowers. Constructive suggestions that can be used to build a stronger Association and industry are always welcome whether they be in the form of flowers or bricks.

Many friends have said to me that with some 400 Association company members, one must have to be a great politician or a great compromiser to accomplish anything. They feel that Association personnel must possess the faculty of being the catalyst which can unite opposing factions while they hardly know that they are being united; of having untiring patience for dealing with a multitude of people; and of seeming to agree with them even while opposing their views.

Common Denominator Role

I have never felt that this was a proper description of the process whereby a program such as this is proposed, discussed, modified and presented to the industry so as to gain its final support. I believe it is more accurate to say it is the process of exploring the needs of the industry and discovering those which are common to a sufficient number of companies for the majority to give the necessary moral and financial support. This may be a less spectacular role, but it is one that always moves me to greater effort and gives me greater personal satisfaction because it can be carried out in the light of frankness with all concerned.

I have made quite a point of the fact that when each new major activity was proposed, it was decided to solicit special subscriptions for that purpose rather than increase the membership dues, the thought being to let each tub stand on its own bottom without jeopardizing the others. I *(Continued on page 298)*

Without Fanfare

THE country takes justifiable pride in the achievements of the armed forces and in the magnificent job of industrial America in supplying the needs of war. Yet I doubt that the public generally is aware of the tremendous contribution the electric and gas utilities have made with their own resources and without fanfare. This industry has supplied the very life blood of the war production effort throughout the country. Ration coupons were never needed to buy electricity or gas. It has never been necessary to fix ceiling prices. There has never been too little, too late."

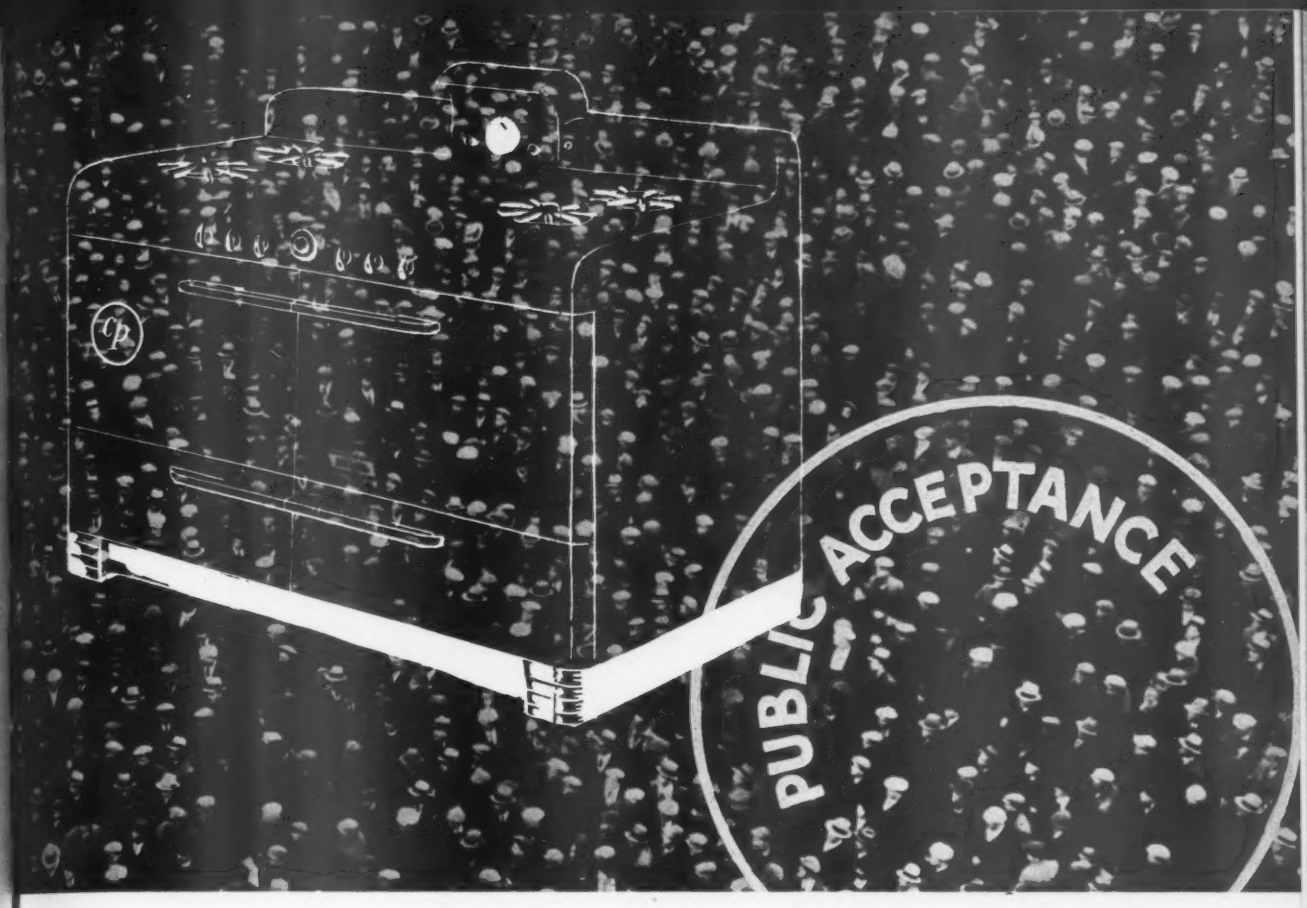
—Ralph H. Tapscott, President, Consolidated Edison Co. of New York, Inc., at annual stockholders' meeting, May 21.

Personality

● The Boonton Molding Company's employee manual in its closing section has these two paragraphs:

"A corporation is only a legal convenience. It's a skeleton on which can be hung the ownership of certain things so the sheriff can lay hands on them when necessary. It has land and buildings, perhaps; some money, possibly; some orders, probably; and some debts certainly. But with all these things it is still a skeleton—it doesn't become a living thing, certainly not a successful thing until it gets a personality in the shape of people. People who keep the shop clean, people who make, finish, inspect, and ship its products, people who meet the customers, who plan the schedules, who keep the wheels turning by doing all sorts of things.

"Their combined personality becomes the corporation's personality. It lives or dies by their attitude toward their work. We believe a good corporation must first take care of its own people, try to make their job pleasant, take some of their troubles away, offer them someone to depend on. . . . . We will also get some enjoyment out of life during working hours as well as outside. . . . . These things pay dividends to the company and to you."



Postwar Gas Range Horizon

Despite so-called "electric trend" gas range sales more than held their ground in past and offer bright postwar prospects

BY JAMES I. GORTON

National Promotional Director, "CP" Manufacturers Range Group, A.G.A.E.M.

A FEW months ago I started putting together facts and figures on the gas range business. From the material available it looked to me as though many people were trying to talk the gas range people into going out of business. But when you start to analyze some of these articles and figures, it becomes crystal clear that most, if not all, the figures being used to paint the gas range picture black came from our competitors. They were collecting the figures, putting them out, and interpreting them any way they saw fit. And people both in and out of the gas business were being influenced by them.

Let's look at some of these figures. The War Production Board estimates that there are 20,304,000 homes using gas for cooking. This includes both piped and L.P. gas. The W.P.B. states that 4% of these ranges become worn out each year and must be replaced. While that 4% may seem low, remember that the purpose of this percentage was to indicate how many ranges were gradually folding up and were beyond repair. When we look back at some of the ranges turned in during old stove round-ups, I think you will agree that 25 years is perhaps not so long in the life of a gas range after all. Some utility studies indicate that this estimate should be 5%. But as long as we are using someone else's figures, let's stick to this 4% for a few minutes and look at the range business from 1930 to 1940.

There was an average of 16,000,000 gas customers in that ten-year period. If we apply the W.P.B.'s 4% annual necessary replacement figure, we find that 6,400,000 of these 16,000,000 gas ranges wore out and had to be replaced in this ten years. There were 2,734,000 new homes built in that period. If we assume that 90% of them used gas, we find a total of 8,860,000 gas ranges that had to be produced and sold if these 8,600,000 homes were to eat. It was what you might call a "take-it-away-over-the-counter" market.

In that period, 11,392,000 gas ranges were built, so the difference between these figures gives us 2,532,000 homes which voluntarily replaced their gas ranges because they wanted something better. This was 16% of the total sales.

That is not a very healthy figure. The gas range business was living off its own fat. It was not creating a desire for new models and new improvements. In those same years the automobile busi-

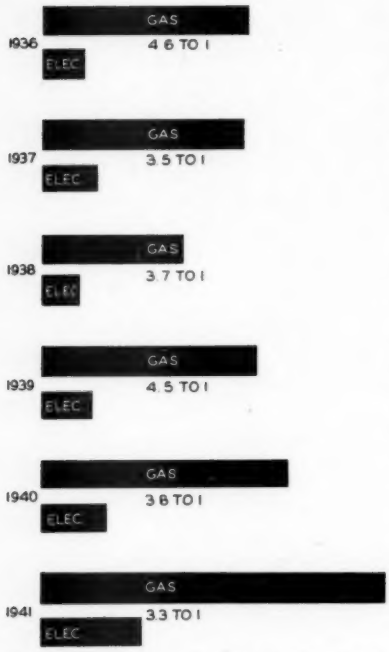


Figure 1. Actual unit sales of electric and gas ranges in the period from 1936 to 1941

ness not only created new customers, but it aroused such a desire for new improvements and new models, that about 50% of its sales of new cars were to people who already had a perfectly good car but thought they needed a new one. Think what the gas range business would have been like if 50% of our customers decided that even though their old range was all right, they wanted a new one so they could have all the latest gadgets and improvements. That is something to dream about.

By using the past as a base, let's try to figure out the postwar gas range market. If we increase the W.P.B.'s 4% essential replacement figure to 5% because of the war, and if we figure that 10% of these homes go electric, we find that 9,136,000 gas ranges must be replaced in the next ten years. Make your own guess about new home construction. Some people use estimates of 10,000,000. I have used 6,000,000 just to be on the conservative side. If 70% of these new homes use gas for cooking, we get a new home market of 4,200,000 gas ranges. So here is an automatic ready-made market for 13,336,000 gas ranges. The L.P. gas industry expects to add 1,500,000 customers in 3 years after the war. And if we raise the 16% voluntary replacement market to 20% because of all the emphasis on new things, and because of the increased tempo of voluntary obsolescence, we get 4,061,000 more, or a total minimum of about 19,000,000 gas ranges—that is, nearly 2,000,000 gas ranges a year for ten years.

If you don't believe these figures, take a look at trends and make your own guesses. Figure 2 shows the per cent increase in gas range unit sales from 1929 to 1941. One line is a smooth curve or trend. If you project this line on into the future you will see that sales in the normal years ahead will hit well above the 1,700,000 unit figure of 1940 and land at about the 2,000,000-a-year mark.

Just where the actual sales figures land on this curve will depend on many things, such as economic conditions, utility merchandising policies, aggressiveness of L. P. gas, manufacturers' policies, sales of other equipment, and other factors.

Stronger Promotional Base

I don't have the ability, courage or audacity to predict depressions, government policies, or many of the other things that may influence sales. I do know that gas utilities will be more aggressive in their efforts to promote "CP." Dealer organizations and utility dealer participation plans will be stronger and better organized. Range manufacturers' advertising efforts will be increased on an average of 100% over 1941. House heater, refrigerator, water heater manufacturers will become more aggressive. A. G. A. national advertising program will be extended. The industry will spend about $25,000,000 a year in promotion of gas and gas appliances. All promotional efforts of manufacturers and utilities will be coordinated to provide a stronger base for you to sell on.

The one factor I haven't spoken of is competition. And when I say competition, I mean the "electric big bad wolf" the gas industry talks so much about and is so concerned about.

One of the favorite promotional devices of the electric men is to talk about the so-called miraculous increase in electric range sales. Figure 3 shows what those astonishing increases look like on paper. In the five years before the war, electric range unit sales increased 180% in 1941 over 1937. During this same period, gas range sales increased 169%. In 1939 electric range sales fell off to 72% of 1937, while gas range sales went up to 105%. Electric range sales went to 111% in 1940 while gas range sales showed a steady upward trend to 123%.

If that sales record makes the gas industry "decadent" then Webster will have to redefine the word. Actually, the gas range record makes the electric industry look pretty bad. What I want to know is who is telling who that gas cooking is an antiquated service, and that the gas industry does not know how to sell?

Electric Trend a Myth

Here are the electric and gas range sales figures presented in another way. (Figure 1) This illustrates another favorite device the electric industry uses to try to break down our morale and impress magazine editors and their readers of the coming electrical cooking era. In electric range advertising you constantly see statements to the effect that "for every electric range built there used to be ten gas ranges, and now there are only 3.3." Well, when you look at it, you can see what a misleading statistical sales promotion idea that is. Actually, the electric industry has been losing ground. It used to be 3.5 to 1 in 1937, then it went to 3.7 to 1 in 1938—to 4.5 to 1 in 1939—to 3.8 to 1 in 1940, and then in the abnormal year of 1941, which should not be considered in plotting trends, it came to 3.3

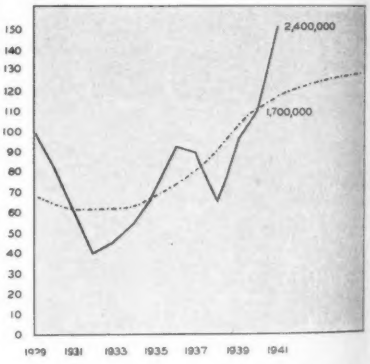


Figure 2. Trend of gas range unit sales (1929 = 100%). Smooth curve represents trend

to 1. Anytime you can outsell competition consistently by better than 3 to 1, you don't have much to worry about.

And when you examine electric range sales figures closely, you see that these ratios don't mean anything anyway.

The electric industry says they have 3,554,000 ranges in use in the U. S. When you take the 1940 census figures and add electric range sales in 1941 and 1942, you get a discrepancy of about 800,000. The census shows only the chief cooking fuel used. In other words, more than 800,000 electric ranges are in summer camps or in homes where some other type of range is chiefly used for cooking. But let's take the electric industry's own figure of 3,554,000, just to avoid arguments.

Gas 20 to 1 Cooking Choice

The electric industry and the U. S. Census state that about 43% of all electric ranges are in rural territories. In much of this territory we can assume there has been little or no gas available in the past. This leaves about 1,981,000 electric ranges in urban territories. But that doesn't mean that all of these 1,981,000 electric ranges are on gas lines. Many of these electric ranges are in sections of towns and cities where no gas is available. We are now working with A. G. A. to determine how many electric ranges there are on gas lines. Until this study is completed I will make a guess that about one-half of the 1,981,000 or less than 900,000 electric ranges are on gas lines. That means that about 5% of women use electricity for cooking where gas is available. In other words, where the consumer has a choice, it is gas about 20 to 1!

And now let's look ahead a little. About 1,000,000 rural homes and farms will be electrified in three years after materials are available. Only 10% of existing wired farms have electric ranges. Only 35% of existing wired rural non-farm homes have been sold. To the 8,600,000 rural wired homes, representing about one-third of the total wired homes of the U. S., the electric industry has sold a total of only 1,572,000 ranges, in spite of all of the millions of dollars of advertising and promotion we hear about. I don't think that is much of a sales job.

The electric industry expects to sell

ELECTRIC RANGE MARKET	
In use—1945	3,554,000
Rural	1,573,000
Urban	1,981,000
On Gas Lines (est.)	1,000,000

3-YEAR ESTIMATES	(Postwar)
Rural wired homes	8,600,000
To be electrified	1,000,000
Electric range sales (est.)	2,255,000
Electric range sales rural (est.)	1,127,000
L-P Gas (est.)	1,500,000

2,255,000 ranges in the three-year period after the war, and if one-half of them go into rural territories off the gas lines, I think you will agree they are not shooting very high when the L. P. gas industry alone expects to add 1,500,000 customers in the same period and in the same territory.

Just to show you that all is not sweetness and light in the electric industry, read what "Electrical Merchandising" says about the 9,000,000 home rural market that represents one-half the electric range sales and their largest and easiest-to-sell market:

"In the areas, suburban and farm, where electric range saturation at the present time is highest, we will face in the postwar period a serious competitive situation. Because these areas are beyond city gas lines they should offer the greatest opportunity for the sale of electric ranges and water heaters. It is a serious fact therefore that

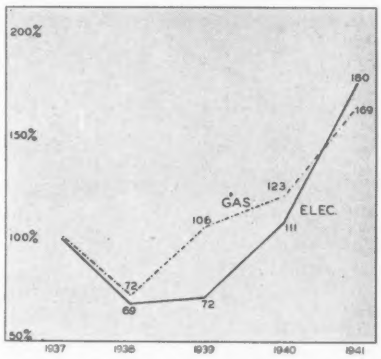


Figure 3. Per cent increase in unit sales of electric and gas ranges from 1937 to 1941 (1937 = 100%)

liquefied petroleum for these uses has made such considerable headway. Recent figures indicate that just before the war L. P. range installations on farms and in rural non-farm areas were growing faster than electrical cooking installations in the same territory.

"There is only one answer, and that is an advertising, selling and promotion job which will firmly establish the superior service of electricity for cooking. Here is one cooking promotion that the combination companies could well join with the straight electric companies in carrying through."

And just to show you that the electric industry is right in viewing the future with alarm, I want to point out that in a study made by "Country Gentleman" only 55% of the rural families interviewed said they wanted an electric range, while 34% said they wanted to buy a gas range. And I ask you, how many rural homes are on gas lines, and why they want gas if it is the antiquated fuel our competitors label it.

Well, you say—"What about those surveys that show such very great preference for electricity?"

Take a look at some of these surveys. Figure 4 shows extracts from a study "Woman's Home Companion" made among its readers. Let me remind you

WHAT THEY SAY

Woman's Home Companion

	Gas	*Electric*
In Use	61%	15%
Want—		
Gas Users	52%	40%
Electric Users	20%	80%
Satisfied	87%	93%
Age	7	5

Figure 4

that this was not a cross-section of the country—none of the magazine surveys are. To make studies like this, frequently magazines ask women to be on a consumer panel and fill out and send in questionnaires. Just as soon as you put anyone on a consumer jury you haven't got a typical housewife giving you unbiased opinions—you have an expert whose own feelings are submerged in the responsibility of becoming an expert, and she starts putting down check marks and expressing preferences for products and services she knows little about. Be that as it may, we will use the "Woman's Home Companion" figures anyway.

You will note that 87% of the women who use gas are satisfied with gas, and yet 40% of them say they will buy an electric range. That doesn't make much sense, particularly when this 40% have never used an electric range. I think this is a dangerous trend and one we must do something about. I am convinced that women don't particularly

care what fuel they use, but they have the impression that an electric range is the modern range. That is not surprising, when you consider that each one of us judges things by his own experience, and the majority of these women are using a gas range that is more than 7 years old, and have never used a modern gas range. They have had no experience with clock controls, smokeless broilers, simmer vitamin-saving gas range burners, and all of the other advantages that have been commonplace in gas ranges for years.

One of the biggest jobs we have to do is to tell them and show them that gas ranges are modern and have all the automatic features they can get in any other range, and many other advantages besides. In all of our advertising we are going to show fully automatic clock-controlled ranges. Think what it would mean if every gas range shown in advertising was fully automatic clock controlled! Think what it would mean if every dealer and gas utility featured a clock-controlled gas range in their showrooms! It wouldn't take us long to get the story of the modern gas range over to a customer.

And now let's take another look at the "Woman's Home Companion" figures. (Figure 5.) Seventy-six per cent of the women said they wanted oven clock controls; 53% want simmer speed burners, and 64% want automatic oven lighting.

There is only one type of gas range that meets these requirements, and I don't need to tell you that it is a gas range built to "CP" standards.

WHAT THEY WANT
Woman's Home Companion

Oven Clock Control	76%
Automatic Oven Lighting	64%
Simmer Speed Burners	53%
Rounded Oven Corners	48%
Giant Burner or Unit	18%

Figure 5

Nathaniel Hawthorne wrote—"Nobody, I think, ought to read poetry, or look at pictures or statues, who cannot find a great deal more in them than the poet or artist actually expressed."

I sometimes wonder if when the gas industry looks at the "CP" gas range, it sees anything more than a set of specifications and a few nuts and bolts. I wonder if we appreciate just what we have in the "CP" seal. The "CP" program is one of the most progressive merchandising ideas in the history of the United States and Canada. Here, for the first time, to my knowledge, with the exception of the I.E.S. lamp, a group of manufacturers within an industry have voluntarily agreed upon a uniform set of specifications that provides a buying guide for the consumer. It is really an outstanding business landmark. It is a far forward step that will be copied by many more industries as time goes on. And with the growing strength of the so-called "consumer movements" and Government grade-labeling pressure, through "CP" the gas industry is in a unique position to obtain acceptance for its products and for its fuel.

I don't think I need to tell you about "CP." You know better than I do what the "CP" program has accomplished for you in raising gas range quality and sales. You know what it is going to do for you after the war.

Because I started to use other people's statements and figures, I want to finish up in the same way. If the gas cooking business is the decadent industry competition says it is, then it is decadent because where a consumer has her choice, she selects gas for cooking 20 to 1.

It is decadent because we have a product backed by the soundest merchandising idea in major appliance history. An idea that is keyed to the times and fits into the thinking of every individual, every consumer group, and every dealer organization.

It is decadent because the gas industry will spend more than $25,000,000 a year on promotion of gas and gas ranges.

It is decadent because we will have somewhere in the neighborhood of 87,000 active dealers promoting ranges for us.

It is decadent because we will have available not only the products and the salesmen to sell them, but the sales training and ammunition they will need to carry the story to the consumer. Part 1 of the A. G. A. Sales Training Program will be ready in July. I urge you to familiarize yourself with it and to use it.

It is decadent because we have aggressive plans, and we are going to put them to work.

I don't want to be a "Pollyanna"—nor am I a "Pandora" who can open the magic box and solve all the range problems. *(Continued on page 299)*

New Vitamin A Discovered

● Discovery of a new vitamin A, described as a "twin" of the well-known vitamin A, the vitamin which maintains luster in the human eye and helps fight infection, was announced May 23 before the Rochester section of the American Chemical Society by James G. Baxter and Charles D. Robeson, research chemists of Distillation Products, Inc., of Rochester.

The new vitamin, called gadol to differentiate it from alpha gadol, the name for vitamin A, until a formal name is given it, is immediately important, Mr. Baxter said later, because it speeds the process of assaying vitamin A. Only further research, he said, can determine its specialized uses.

The new vitamin is found, like the original vitamin A and the varieties A-1 and A-2, in fish-liver oils and green plants. Vitamin A sometimes is called the anti-xerophthalmic vitamin because its presence in the diet prevents xerophthalmia, a dry condition of the eyes. The fish oils are prescribed generally for growing babies because in their pure state they also contain vitamin D, a rickets preventive.

To find whether vitamin A is present in fish or vegetable oil, Mr. Baxter explained, two tests are given. One, called the optical methods, measures within a few minutes the substance on a spectrometer. The other is a test of its biological potency and involves feeding samples of the oil to laboratory animals, such as rats, for as long as three months.

The new vitamin A, Mr. Baxter said, has substantially the same "extinction coefficient" as the older vitamin A on the spectrometer. That result, he said, put the optical method of assaying the vitamin on a "firmer foundation." There had been, too, he said, a "grave question" whether the optical tests were valid. Some of these tests, he said, were conducted by Dr. Philip Harris in the company's biological department.

Quantities of the new vitamin, Mr. Baxter said, will be made available to other vitamin research laboratories. The isolation of the new vitamin took three years, he said.

New York Herald Tribune

Saga of a Frontier Fuel—Natural Gas

Coste brothers pioneered development of natural gas in Canada—A typical manifestation of New World enterprise leading to great industrial expansion

This is the first of two installments of an historical article depicting the origin, scope and operations of the natural gas industry in Canada. It is especially timely in view of the annual meeting of the Canadian Gas Association at Murray Bay, Quebec, June 19-22. The concluding installment will appear in the July-August issue of the MONTHLY.

BY H. J. HENSE

American Gas Association Testing Laboratories

PART I

NAPOLEON BONAPARTE had nothing in fact to do with the development of natural gas in Southwestern Ontario, one of Canada's most productive areas, but it was out of the environment of his time that came the venturesome souls that set forth to seek their fortunes in the New World. Among them was one, Napoleon Coste, whose father had named him thus in admiration of the great military genius and conqueror. The name was well chosen, for Napoleon Coste exemplified the energy, enterprise, daring, aspiration and force of character typical of those who set forth upon the seas and transmitted these things to a New World. With his sons, who came to be the pioneers of the Canadian gas industry, he shared in its development, the family running risks, taking chances, gambling on the initial "strike."

Today gas flows from the United States to Canada over the Peace Bridge at Buffalo. In the beginning Canada supplied Buffalo, Detroit and even Toledo. The two countries not only have had much in common throughout their histories from earliest times, but the parallel development of the natural gas industry in both was in many respects characteristic of their growth, life, and industrial expansion.

Discovery, exploitation, competition for markets, rate wars and overcoming of legislative barriers by the natural gas industry not only reflected the temper of the times, but followed in many respects the rough and ready pattern of earlier colonization and development. Although natural gas utilization came first in the United States, Canada was not far behind, many of its early prospectors and drillers, including the Coste family, seeking fields in both countries.

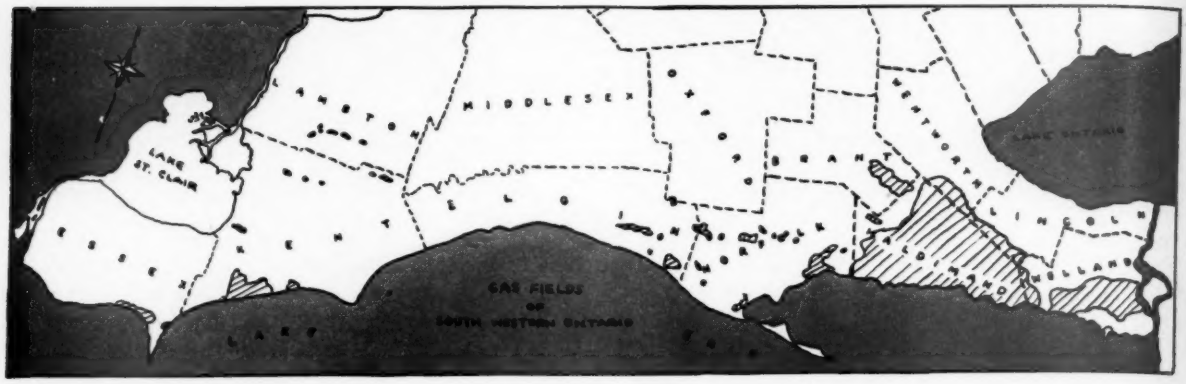
Had not the Coste family, including the brothers who were graduate engineers, initiated Canadian operations undoubtedly some one else would have done so. But since history has its beginnings in events created by individuals the personalities responsible contribute to the record and help explain it. For the family story we are indebted to Miss Pearl Wilson, for the past seventeen years assistant secretary of the Union Gas Company of Canada where many Coste interests exist today. Starting in 1909, Miss Wilson served as private secretary to two of the brothers, serving until 1930 Eugene Marius Coste, who contributed the initiative and technical knowledge for their enterprises, and until 1940 Denis Alexandre Coste whose business acumen and farsightedness took them far. Denis in fact became known as the "dean" of the Canadian gas industry. Both brothers died in 1940, Eugene at the age of eighty-one and Denis at seventy-nine.

The Coste brothers' father, Napoleon, went to Canada originally from his home near Marseille, France. He settled down in Amherstburg on the Detroit River, married, taught school and employed his engineering training in surveying roads in Essex County. There three sons were born, Louis in 1857, Eugene in 1859, and Denis in 1861. When Napoleon received a contract for construction of a portion of the Suez Canal, migration of the family to Port Said followed. The canal project was completed in 1869 and the family returned to Canada in 1883, the year of Eugene's graduation at the age of 24 as a mining engineer from the Ecole Nationale Superieure Des Mines.

Eugene joined the Geological Survey of Canada and after four years was appointed by Queen Victoria as a mining engineer of the survey. Denis, who had

Denis A. Coste

Eugene Coste



attended Dover College in England, first joined a surveying party in the Northwest Territories and then became advertising manager of the "Ottawa Citizen." Subsequently, he became manager and editor of a paper in which his father was interested. Louis, the oldest son, had become associated with the Federal Government at Ottawa and later became a member of the International Waterways Commission. His participation in the gas interests of Eugene and Denis was largely limited, like the father's to financial aid for some of their exploits.

Struck First Gas Well in 1889

In his school days in Paris, Eugene had become vitally absorbed with the inorganic theory of the origin of petroleum. In 1889 he resigned from the Geological Survey and began private practice as a mining engineer, turning his attention to the discovery of oil and gas in Pennsylvania and Ohio as well as in Canada. As a member of the survey his work had embraced the Madoc District in eastern Ontario and the Lake-of-the Woods District in northwestern Ontario where he was the first to report the discovery of gold in 1884. He brought in the first gas well at the western end of the area between the Detroit and Niagara Rivers, which comprises the southwestern Ontario fields, in January of 1889 and in August another well at the eastern end, both districts proving to be the most productive.

Southwestern Ontario is included in the St. Lawrence lowlands bordering the St. Lawrence valley and extending through Southwestern Ontario as far as Lake Huron. The gas fields lay along the shores of Lake Erie for 250 miles between the Detroit and Niagara rivers, extending northward for not more than sixty miles. On the western end a number of successful wells have been drilled off shore in Lake Erie. The low relief of the plain is underlain by strata of the lower Paleozoic age of the third oldest period of four main geological divisions. It corresponds with the appearances of the first well-developed marine animals devoid of vertebra up through the first fresh water fishes, land plants, four-footed animals, and forests.

Gas fields are shown on the accompanying map and gas-producing strata are identified in Figure 1. The top of one strata, the Salina Sand, is roughly indicated in the figure to show the general geology of the region. The chart follows the counties of the map from west to east with the exception that Lambton follows Kent and Oxford precedes Norfolk whereas on the map these are actually north of those counties. Hence the geological curve at these two counties is all-inclusive.

Dr. Charles Evans, geologist of the Union Gas Company, has ably presented the geology of the region in his paper "Natural Gas Fields in Southwestern Ontario." The subject is too extensive to be included here. It should be sufficient to call attention to his charting of a very marked depression in the eastern part of Kent County, a low which marks the division between what may be termed the Cincinnati Arch province to the west and the Appalachian province to the east.

In the Cincinnati Arch province the strata dip northward while in the Appalachian province they rise to the north with the crest of the arch occurring across Haldimand County, where there is the most uniform production of the eastern fields. Types of gas reservoirs known to occur are classified in four groups. These are: (1) where the field occurs on an anticline or dome; (2) fields where the structures have been formed by faulting; (3) buried residual masses of rock; and (4) irregular porosity. Since on the whole outcrops do not exist, drilling has to be done before any geological information is available.

While some small quantities of natural gas had been discovered previous to the time Eugene Coste brought in the first commercial well, it was his courage and initiative which led him to organize a syndicate, raise the money, lease a block of land in his home county of Essex, and drill for gas. This was in the Township of Gosfield, a short distance from Windsor and it was on the 23rd of January, 1889, that a well with more than 10,000,000 cubic feet open flow at

Cooking by Air

● A creole dinner cooked in New Orleans recently was quick-frozen and flown to Memphis. There it was reheated and served to diners who affirmed that it had lost none of its savor in the few hours intervening between kitchen and table.

Prepared by La Louisiane Restaurant the dinner consisted of shrimp remoulade, gumbo La Louisiane, redfish court-bouillon, frozen cheese salad, and crepes suzette. A Chicago & Southern plane carried the viands to Memphis, and the rest of the drama was enacted in the Hotel Peabody.

Point of the demonstration was that the restaurateurs of New Orleans and other cities noted for special types of cooking can bid for an "export" trade, if they desire, with individuals, clubs, hotels, and other restaurateurs as their long-distance patrons.—*Business Week.*

a rock pressure of 420 pounds was brought in. He was partly financed by his father and he was immediately joined in the project by his brother, D. A. Coste.

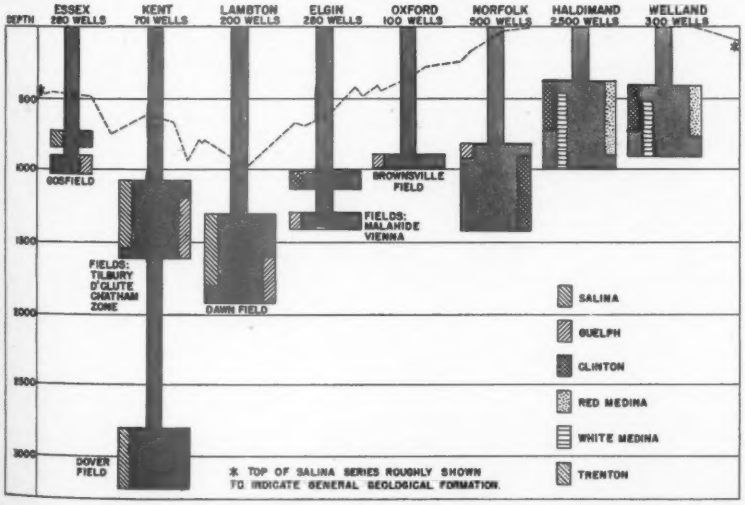
Soon after the discovery well and a few others had proven the territory, the Coste brothers almost entirely disassociated themselves from the project, remaining in the development field and turning their attention to Welland County. It was a wise decision, for although an 8 in. line was laid to Windsor in 1894 and to Detroit in 1895 and two years later gas was supplied Toledo through a line already in existence, the field was rendered useless by encroaching water and had to be abandoned in 1904. Nevertheless the foundations of the Canadian gas industry had been solidly laid and the way paved for the important "strikes" in neighboring Kent and Lambton Counties which were the beginnings of what eventually became the Union Gas Company of Canada, one of today's two outstanding producers and distributors.

In the east the other outstanding company, Dominion Natural Gas Company, a Cities Service enterprise, operates extensively in Haldimand County and to a lesser extent in Welland County. Activity here, as in the west, was started by a Coste syndicate which in August, 1889 brought in an open flow well of 1,700,000 cubic feet with a rock pressure of 525 pounds in Welland County approximately 18 miles west of the Niagara River. This syndicate was the forerunner of the Provincial Natural Gas and Fuel Company which proceeded rapidly with the development of this field. The Haldimand field was discovered by independent operators shortly after the Welland County discovery. This field was temporarily developed by syndicates and was subsequently brought rapidly into production in large quantities by Dominion Natural Gas Company which was formed in 1905 and was then composed chiefly of Pittsburgh interests.

Line Laid Across Niagara

By the fall of 1890 Provincial Company had completed twenty-five producing wells in the Welland County fields. As it was not found feasible to raise money and lay lines to distant Canadian markets, the gas was sold to the Buffalo Natural Gas Company, now the Iroquois Natural Gas Company which, together with Provincial Company, are today sister organizations of the National Fuel Gas Company with headquarters in New York City. An 8-inch line was laid to the Niagara River where three lines were laid across it at reasonable distances from each other to assure service in the event that any one line was taken out by spring ice-flows. In 1891 a rival company composed largely of Buffalo interests, which was later purchased by Provincial Company, laid a line from this field to Buffalo with two lines across the river also serving a portion of the city. These lines somewhat paralleled Provincial Company's lines.

FIG.1 CHART OF WELLS BY COUNTIES WHERE GAS HAS BEEN FOUND IN COMMERCIAL QUANTITIES.



Other independents were organized and did some development work and served some Canadian cities and villages. In the fall of 1903 export of natural gas to Buffalo was stopped and Canadian markets in this area, including Niagara Falls, were developed. Still operating today in Welland County is the Provincial Gas Company which absorbed several other rival companies. More recently, Provincial Company has supplemented its supply by the importation of gas from the Iroquois Company in Buffalo through a 10-inch line over the Peace Bridge.

Besides Provincial three other independents, Medina Natural Gas Company, Central Pipe Line Company and American Engineering Company should be included in the prominent companies operating today. These three are operated by the same management, the first two associated with operations in the Vienna field of Elgin County which were started in 1910 and the third with the D'Clute field in Kent County developed in 1928. American production goes to the Union Company while the production of other independents in the D'Clute field goes to Dominion. A detailed chart of the corporate organization of all principal producers will be given in the next and concluding installment showing their chronological development as related to gas fields.

Developed Tilbury Field

Regarding the Coste brothers' interests today, Eugene Coste's only living son, E. Frank Coste, is the only member of his family directly connected with the gas business. At the present time he is conducting an independent consulting and geological firm in Toronto and has been interested in some exploratory drilling. The Coste brothers were among those to develop the famed Tilbury Field in Kent County which became the outstanding field of the southwestern Ontario district and there formed an operating company in 1906 known as The Volcanic Oil and Gas Company Ltd. This, along with several other producing and pipe line companies, was merged into the Union Company in 1912 and the field became the nucleus around which that company was formed.

Thus the Costes came to be largely associated with the Union Company. Denis made *(Continued on page 298)*

England Spotlights the Kitchen

Pioneering with novel ideas and new materials, Britain launches comprehensive plan to re-build shattered homes

ONE of the most ambitious contributions to England's re-housing program yet undertaken was the Kitchen Planning Exhibition held at Dorland Hall, February 6 to March 3, under the sponsorship of the British Commercial Gas Association. This first full-scale public exhibition was attended by more than 100,000 people, including the Queen and Mrs. Winston Churchill.

Over one hundred different manufacturers cooperated in the erection of the ten full-scale and "package" kitchens which were shown fully equipped and furnished to suit all tastes and income groups. In addition, there were a number of independent exhibits. Interesting new uses were made of materials such as anodized aluminum, stainless and enamelled steel and plastics.

The exhibition was planned by the gas industry as a result of a comprehensive program. In 1943 a Domestic Heat Services Committee was appointed representing the technical and commercial aspects of the industry and dealing with all matters connected with the fuel services of the home. The committee named a prominent woman architect, Miss Jane Drew, as consultant and in cooperation with her undertook an exhaustive survey of the social and economic aspects of kitchen life and the design and equipment of kitchens. Their researches extended to all countries possible under war conditions, including America, to which Miss Drew made a personal visit.

This pioneer piece of research had two main objectives: to give a better life to women, within reach of their postwar incomes; and to suggest ideas to the manufacturers and designers of kitchen equipment in readiness for the switchover from war to peace production.

The outcome of this research—technical suggestions for domestic fuel services by the gas industry, and, on the architectural side of kitchen planning, the recommendations of the architect consultant—was presented to the public in the exhibition.

The main conclusion from the research undertaken was that, while there is no one ideal kitchen to suit all needs, most needs fall into a few given categories and that for each of these there is a solution within the range of present-day technical designs.

Avoidance of accidents was given special consideration in the designing of the kitchens. A special color scheme, which boldly departs from the usual utilitarian decoration of this part of the

Kitchen designed for a large house shows unit fittings of anodized aluminum and cork. Venetian blinds at both windows have enamelled steel slats. The stainless steel sink is in three divisions, one for washing, another for rinsing and a third for stacking cutlery. The sink is arranged so that the washer-up works from right to left

A kitchen designed for a flat suitable for a family in the lower income group. It includes built in refrigerator, gas boiler and the new type of gas cooker in which a griller compartment is incorporated in the oven. A mechanical extractor in the wall to the right of the window removes steam and cooking odors

This "package kitchen" includes gas range, sink and refrigerator, and standard unit furniture of enamelled steel for storage purposes. The transparent cereal drawers demonstrate an interesting use of plastics

View showing larder next to built-in refrigerator, and on the right the utility room. The housewife taking clothes out of the drying cupboard has no need to postpone washing day until fair weather as this gas-heated unit can dry an entire family wash in two hours

Kitchen side of kitchen-bathroom unit. A hollow wall between takes all the waste pipes, cold supply pipes, gas and electric services. The wall unit is of strong aluminum alloy faced with anodized aluminum sheets backed with cork for insulation against sound

This living-room-kitchen has a 4'6" partition which divides the working portion of the kitchen from the living-room portion. To the right out of the picture is the utility room provided for washing and odd jobs

A horizontal gas cooker and a shoulder-high refrigerator with wall shelves and cupboard are featured in this arrangement of kitchen units suggested by Miss Jane Drew. Vegetable drawers are of enamelled steel

house, makes each kitchen something more than merely a "woman's workshop"—a room which is pleasant as well as efficient to work in.

Finally, it has been borne in mind that, in addition to the building of new houses and flats, a large number of existing dwellings will call for reconditioning or conversion into flats, and that here must be greater scope provided than before the war for making use of the principles of standardization and prefabrication.

Briefly, the planning of the exhibition recognizes firstly, that housing will be "priority No. 1" after the war, and secondly, that the kitchen is the hub of the home. Planning and good equipment have an importance that cannot be estimated, a fact which is stressed throughout the displays.

The exhibition has the support of the Ministry of Works and the Ministry of Fuel and Power.

Copies of the plans of the 10 kitchens are available to architects and housing authorities on application to the British Commercial Gas Association, 1 Grosvenor Place, London, S.W.1.

Another compact "package kitchen" which includes gas cooker, sink, water heater and refrigerator, and standard unit furniture for storage purposes. Sink and draining board are of enamelled steel and small racks are provided to simplify washing up

A.G.A. Statistical Program

Long-term basic changes in gas industry statistical reporting follow reorganization and strengthening of Association bureau

BY IRVIN DUNSTON

Statistical Bureau, American Gas Association

FUNDAMENTAL changes have been made recently in the reporting activities and the program of the Statistical Bureau of the American Gas Association. The following summarizes the background for these changes and describes some plans for the future. The work and the program of the bureau were reviewed in detail at a meeting of the Committee on Development and Use of Gas Industry Statistics at A. G. A. Headquarters, March 30, 1945.

New Monthly Bulletin

The principal shift in periodic statistical reporting already evident is reflected in the issuance of a new publication, the *Monthly Bulletin of Utility Gas Sales,* beginning with January, 1945. This bulletin was designed as a partial substitute for the *Monthly Summary of Gas Company Statistics,* which was discontinued in December, 1944. It will be supplemented by a more detailed quarterly report.

The new statistical bulletin is intended to give a timely picture of general trends in sales for each branch of the gas utility industry. The former monthly summary was issued with a time lag of three months, while the goal for the new bulletin is to have it mailed before the end of the succeeding month. Success or failure in achieving this goal will depend basically on the promptness with which monthly sales data are supplied by the cooperating utilities.

The bulletin appreciably reduces the monthly volume of clerical work for the bureau and also cuts down the burden of statistical reporting for those companies participating in the statistical activities of the Association. It presents sales data in the form of monthly comparisons, cumulative totals for the 12 months ending with the current month, and cumulative totals for the calendar year. In addition, average monthly sales data for the 1935-39 period will be added shortly, although it has not yet been decided whether this comparison might best be made by the use of absolute values or by index numbers.

Data Shown in Therms

The data are shown in therms, although information on manufactured and mixed gas sales is being restated in MCF in at least the first few issues. The therm has been adopted as the unit of measurement in order to permit publication of meaningful totals for manufactured, natural and mixed gases. Accurate comparisons over long periods of time also are facilitated by use of therms; such comparisons may be misleading when MCF are used and changes in calorific values have occurred.

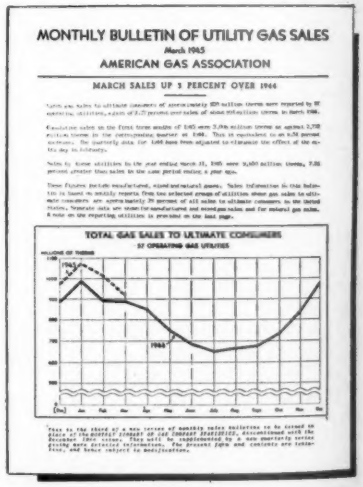
Sales statistics in the new bulletin are based on 33 reports, covering 57 operating utilities, as compared with more than 300 reports which were used in compiling the discontinued monthly summary. Manufactured and mixed gas data for 21 utilities are received in 18 reports; these utilities are responsible for about 33 per cent of total sales to ultimate consumers in this branch of the industry. The natural gas sales statistics cover 36 utilities, although only 15 reports have to be processed, accounting for almost 41 per cent of all natural gas sales to ultimate consumers.

The two groups of reporting utilities were selected so that the relative geographical distributions of their sales follow closely the distributions of total sales in the respective branches of the industry.*

When the bulletin was first discussed, it was thought desirable to use send-out data rather than sales for tracing general trends. Sales data have certain definite limitations because billing normally lags behind consumption; in addition, the problem is now further complicated by bi-monthly and quarterly meter reading schedules as well as by the various estimating procedures adopted as matters of wartime expediency. It proved to be a rather troublesome problem to get uniform send-out data from utilities distributing natural gas, where the term "send-out" has not been found to have the definite meaning which it has for manufactured gas companies. The Statistical Bureau is now studying the problems involved in developing a measure of send-out applicable to natural gas companies which will yield uniform information. If it proves feasible, it is planned that send-out data for both branches of the industry will be added to the bulletin.

Sales data have value nevertheless in that they are readily understood by those without an intimate knowledge of gas utility operations. They are also valuable because by means of estimates of total sales in each branch of the industry, which may also be added to the bulletin, it may be possible to continue the sales series which appeared in the discontinued monthly summary.†

It should be clear from the foregoing


MONTHLY BULLETIN OF UTILITY GAS SALES

March 1945

AMERICAN GAS ASSOCIATION

MARCH SALES UP 5 PERCENT OVER 1944

TOTAL GAS SALES TO ULTIMATE CONSUMERS

57 OPERATING GAS UTILITIES

Title page of new 8½" x 11" Monthly Bulletin of utility gas sales

* The utilities were not selected at random, but in a purposive manner, and we therefore cannot estimate sampling errors according to standard probability theory. Following conventional statistical usage, we do not use the term "sample" either here or in the new bulletin.

† Such estimates can be developed by regression equations describing the relationship between sales of the reporting utilities and total sales in respective branches of the industry. Standard errors of estimate can then be supplied for those who wish to make use of the industry estimates. The estimating equations would be based on monthly data for the period from December, 1943 to December, 1944. A fairly rigorous quarterly check can be made on these estimates as data become available for the larger group of companies supplying quarterly information.

that the bulletin in its present form is not regarded as fixed in any sense. Form and contents are both subject to modification. New items will be added; various experiments will be tried with the aim of enhancing the value of the publication while publishing it promptly enough to be timely.

Quarterly Summary

The forthcoming quarterly summary will contain information on numbers of customers, sales and revenues somewhat in the form in which these data appeared in the former monthly summary. A considerably revised report form has been developed which will be used by all participating gas utilities, regardless of the type of gas distributed. It has been subjected to a very careful examination by representatives of various utilities from whom a variety of helpful suggestions were received.

During the first year of publication a classification will be maintained between natural gas and manufactured (and mixed) gas, as was done formerly. After a full year's information has been collected, however, separate series may be shown for mixed gas. According to present plans special series will be developed to show gas consumed in central househeating and commercial space heating.

The quarterly summary will not report data for individual states. In addition to national totals, however, regional data will be shown according to the nine divisions of states used by the Bureau of the Census in its statistical summaries. Companies smaller than Class D (less than $25,000 revenues per year) will no longer be included in the quarterly tabulations.

Annual Statistics for 1943

The annual bulletins describing 1943 operations of the gas utility industry (Statistical Bulletins Nos. 55 and 56) have recently been issued in approximately the same form in which they were published in previous years. However, the industry income statements have been omitted because of the small number of companies supplying the required information. The corresponding 1944 Annual Statistics will also be prepared substantially in this form in order to permit publication well before the customary October date. It is planned to devote the time saved thereby to planning a more comprehensive presentation of annual statistics for subsequent years.

The annual statistical reporting form will be studied carefully and will probably be revised extensively before being printed and distributed for reporting on 1945 operations. The Committee on Development and Use of Gas Industry Statistics has recommended that beginning with 1945 the Annual Statistics be consolidated into a single bulletin. It has also suggested that related statistical series from other sources be added to the consolidated bulletin in order to increase its usefulness and give it the character of a general statistical handbook. The Statistical Bureau is preparing a suggested list of additions from various governmental and institutional sources for the review of the committee.

Income and Balance Sheet Study

The committee has recommended that the Statistical Bureau undertake a special study of all Class A and B companies (having annual revenues of $250,000 or more) in order to permit the presentation of consolidated balance sheet and operating income data for ten-year periods. The publication will be considered in the nature of a financial supplement to the abbreviated 1943 and 1944 Annual Statistics. This is considered as a preliminary step in the expanded program of financial reporting for the industry—a program for which a considerable demand has been exhibited by financial institutions.

Pittsburgh Utility Backs War Drive

The Equitable Gas Company of Pittsburgh got behind the mighty 7th War Loan Drive with this gaily decorated float, which appeared in the War Loan Drive parade, Monday, May 14. The parade—made up of war heroes, two-score bands, Army vehicles, floats of war industries, and smartly uniformed men and women from volunteer organizations—was the biggest in Pittsburgh's history. It marked the beginning of the drive to sell $51,950,000 in Series E bonds in Allegheny County. The county's quota for all series of bonds is $91,450,000

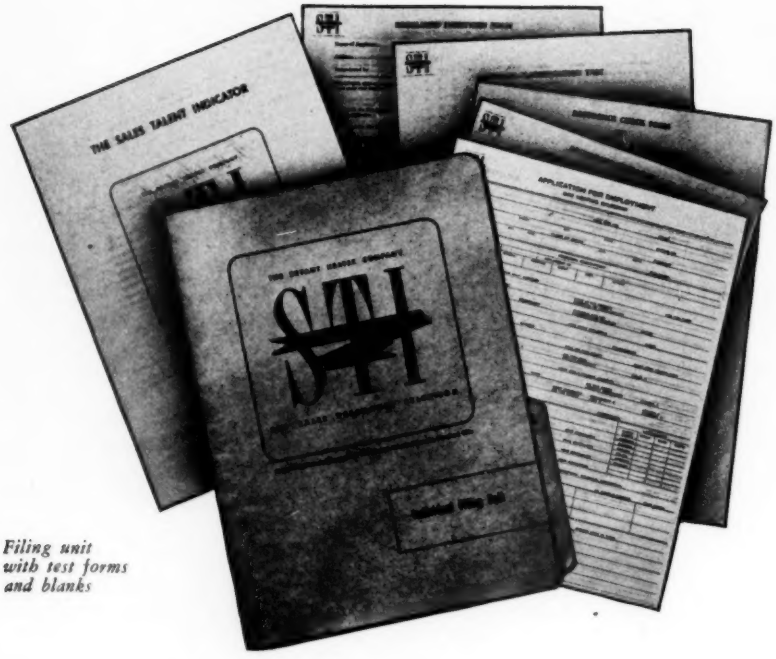
Texas Well Drilling Shows Increase

THROUGH March 17 this year 112 new gas wells had been reported in Texas, in contrast with 48 in the corresponding period of 1944. Seventeen of these wells were classified as discoveries, an increase of 10 over the figures for last year. In the same period 801 new oil wells were reported compared with 614, including 28 successful wildcats against 35 last year. Failures totaled 386, compared with 145 last year.

Personnel Conference in Kansas City

THE next American Gas Association Midwest Personnel Conference will be held at the Phillips Hotel, Kansas City, Missouri, on June 7, Chairman R. B. Harkins, personnel director, Panhandle Eastern Pipe Line Company, has announced,

In addition to a discussion of current industrial relation developments, Oakah L. Jones will outline the job description and evaluation work being done by the Oklahoma Natural Gas Company. This covers all classifications of supervisory and non-supervisory employees in the field and offices.



Filing unit with test forms and blanks

The growing interest that is manifest throughout the gas industry in effective procedures for the selection of sales personnel, is abundant proof of the seriousness with which sales executives are approaching the major problem of rebuilding effective, well-trained sales organizations in preparation for the day when merchandising is resumed.

The development of sound scientific techniques and procedures for the selection of sales personnel has been an outstanding contribution to the gas industry. We are greatly indebted to the alert and progressive gas appliance manufacturers who have developed such sales personnel selection programs, and who have made them available for our use.

The Servel Salesman Selection Program was introduced under the sponsorship of the Committee on Selection and Training of Sales Personnel of the American Gas Association in December, 1944, and to date more than 1,000 sales executives of gas companies throughout the industry have received instruction in the use of the program for the selection of residential gas appliance salesmen.

The Bryant Scientific Sales Talent Selection Plan, which is very well presented in Mr. Cushing's accompanying article, is another outstanding contribution to the selection in this case, of competent gas heating salesmen. Your careful consideration of this program for upgrading your postwar gas heating sales personnel is recommended, and your enthusiastic support of the program is solicited by your Committee for the Selection and Training of Sales Personnel.

R. E. WILLIAMS, CHAIRMAN, COMMITTEE ON SELECTION AND TRAINING OF SALES PERSONNEL, AMERICAN GAS ASSOCIATION.

Scientific Sales Talent Selection

Evaluated and standarized program for measuring qualities of gas heating salesmen without enduring a test period

BY C. F. CUSHING

Distribution Manager, The Bryant Heater Company, Cleveland, Ohio

WITH sales personnel looming as a postwar problem, our company has undertaken direct aid to gas companies, distributors and dealers in the scientific selection of competent gas heating salesmen. As a first step, the Personnel Research Institute of Western Reserve University, headed by Dr. J. L. Otis, professor of psychology at the University, was retained to prepare selection procedures evaluated and standardized for gas heating salesmen. Dr. Clare W. Graves, senior member of the Institute, supervised the field work.

The result is the Sales Talent Indicator Plan, named for the Bryant aptitude test, itself designed to bring out and to cross-check scientifically for the employer those personal qualities in any applicant which will, or will not, lead to outstanding success in gas heating sales.

The S.T.I. Plan is not an infallible hiring guide, of course; no plan which recognizes the unavoidable human element of error in contacts between employer and applicant can claim to be that. However, the plan is based on five major analyses of the applicant's capabilities. In the order in which they are applied, these separate parts are a Weighted Application Blank, a Regulated Interview Form, the Sales Talent Indicator test itself, a Salesman Classification Test (a test of intelligence), and a Mechanical Aptitude test which may be required for those situations where salesmen are expected to do some engineering.

These five analyses were tailor-made for gas heating sales applicants by careful selection of procedures having a real bearing on the applicant's ability to sell in this field only. That is, this plan would not be of value in selecting refrigerator salesmen, or shoe salesmen, or automobile salesmen.

Of these five analyses, the most useful is the Sales Talent Indicator test, which was constructed by applying a number of standard psychological tests to some 200 gas heating salesmen in a number of widely separated cities. Divided by the psychologists into two groups of 100 men each, members of the first group were limited to top men in the gas heating sales field—men whose records over a period of time were known to be outstanding. The other group was made up of men whose sales work was known to be below par.

From these standard tests, only those questions were finally chosen for the Sales Talent Indicator which best underscored the differences between the two groups. In other words, the Personnel Research Institute carefully winnowed from a mass of questions only those which elicited uniform answers from the top group, and contrary answers from the bottom group.

Such questions range widely over the

whole gamut of human interests, occupations, likes and dislikes, personality adjustments and disagreements. From the mosaic of answers, the psychologist is able to assemble a fairly complete personality picture of the successful salesman. If the applicant's "portrait" is then markedly similar to the composite picture of men known to be successful gas heating salesmen, the applicant will probably enjoy a similar success. Contrariwise, applicants who respond in conformity with the below-level group are themselves likely to be the same kind of unsatisfactory salesmen. A carefully devised check study has already shown the following: Of men selected by the Sales Talent Indicator test as part of the S.T.I. Plan, 82 percent will be above the average of men employed through methods now commonly in use by the many companies involved in this study.

We believe that this extra margin of assurance that the employer is getting good salesmen will be increasingly im-

A manual of 28 pages gives complete details of how to conduct the Bryant tests, includes helpful demonstration data

portant in the postwar period, not only to gas companies, distributors and dealers in terms of lowered training investment and sales costs, but to returning members of the armed forces in terms of human values and personal accomplishment. Our study has shown that this test will reject applicants who have little or no chance for success as gas heating salesmen, a factor which has its own importance in view of the aggressive merchandising effort which will be required of the gas industry after the war.

An individual filing unit for each applicant, complete with the necessary forms in their proper order, facilitates the use of the plan. It is the purpose of these individual folders to bring into focus, in sequence, those five major analyses which are the heart of the plan, and to summarize them readily. A manual is also provided for the instruction and use of those charged with the employment of gas heating salesmen. Complete and simple instructions for the use of the Weighted Application Blank, for conducting the interview, and for administering and scoring the tests, are included in this ready reference manual, which has received much favorable comment from leading psychologists. The major part of the testing and scoring can be supervised by untrained help in the personnel department, sparing the time of experienced people while accumulating the necessary data.

Weighted Application Blank

The Weighted Application Blank leads off in the individual filing unit. A "weighted" application blank, as the term indicates, is one in which pertinent information items are accumulated and scored to eliminate obvious misfits. An important part of the plan, the weighted and scored application blank has proven a useful tool in the selection of salesmen in practically every situation where care has been taken to pick out significant questions. The blank, based upon the study of gas heating salesmen and salesmen in allied lines, is accompanied by a recording form for scoring the answers, and by an interpretation table which rates the applicant as favorable, questionable or unfavorable. This recording form can be applied as a yardstick to any application blank already in use.

A reference check is also provided to follow up the names given by the applicant. Unlike the usual and somewhat casual check which is customary in the matter of references, this form provides some very definite questions to which the answers are important. The reference check should be followed closely. It is easy to gloss over a reference follow-up of the usual type; but this form makes a careful check both easy and certain, if adhered to.

The second step in the plan is based on the Regulated Interview form. Because any interview, of necessity, involves a high degree of personal judgment, it is not sound modern practice to rely upon the interview as the only device for selecting salesmen. Dr. Otis believes, in fact, that the personal interview should have as its major purpose the screening of men, rather than their selection. The Regulated Interview form covers work history, family background, educational history, and the applicant's domestic and economic situation. His attitude, recent job experience, and reaction to the opportunity offered him are also carefully analyzed. An interview rating chart on the back page sums up the interviewer's own impressions of the applicant in concise form.

C. F. Cushing

Next comes the Sales Talent Indicator, the most valid measure of sales success in this selection plan. Tailor-made to select those men who are interested in being good gas heating salesmen, the Sales Talent Indicator combines the experiences of the investigators with the two groups of salesmen mentioned above. As explained to the applicant, this 8-page blank is used to obtain a helpful record of his preferences with respect to a variety of activities and occupations. The questions are not a test

A "Good Boss"

● In the judgment of an employee the man above him is a "good boss" if he possesses the following *qualities* and *characteristics:*

Knows his job thoroughly.
Maintains a friendly attitude.
Practices fair play.
Appreciates honest effort.
Gives instructions clearly.
Controls temper.
Possesses the foresight to plan.
Keeps his mind open.
Refrains from "bossiness."

How do you think *your* employees would rate you on these qualities?
—From booklet published by *Elliott Service Company.*

of ability; there are no "right" or "wrong" answers.

The Sales Talent Indicator is a measure of personal traits common to successful salesmen in the fields served by Bryant, and an aid in determining whether the applicant has those traits. It asks only that the applicant answer the questions according to his true feelings, so that the prospective employer can help him to determine whether he really *wants* to be a gas heating salesman. Since the test will indicate in advance the applicant's probable success in this line, his cooperation is essential.

Next comes the Classification Test for salesmen. Naturally, an applicant who has received a good score on his Weighted Application Blank, who has made a favorable rating in his interview, and who has received a high score on the Sales Talent Indicator, will have a better chance than other applicants if he is more intelligent than they. The Salesman Classification test is a short, 15-minute analysis of the applicant's general knowledge and reasoning ability.

Equally important in the opinions of psychologists and personnel executives is the test for mechanical aptitude, particularly in sales positions where the salesman does his own engineering work. Here the well-known Minnesota Paper Form Board Test, though not an absolutely necessary part of the selection procedure, is utilized.

As already stated, the object of the plan is to narrow the margin of possible error in hiring applicants. The accompanying manual, in addition to full instructions for administering and scoring the tests, also includes interpretation tables designed to guide the employer in making the best use of the results. The Sales Talent Indicator, the Classification Test, the Minnesota Paper Form Board are covered by interpretation tables which rate the applicant closely as an employment prospect by letter grades. Applicants in the favorable A and B groups, as indicated by their scores, would be highly desirable prospects. Applicants in the C group tend to be somewhat questionable. Applicants rated in the D classification are dubious prospective material.

Interestingly enough, the psychologists point out that an unusually favorable score in the Classification Test, for instance, requires finding eventual supervisory or managerial jobs for the applicant. Otherwise, men of this classification level will become dissatisfied with their progress and, being capable of better jobs, can be expected to leave if they do not get them.

A combination table for interpreting any test score in the group is also included with the S.T.I. Plan, giving all the requisites for any rating level. In short, it is the total picture that should determine whether or not the individual should be hired, not any one favorable or unfavorable factor considered by the prospective employer. Serving as a thorough analysis by which the applicant is put into the test tube against known and measurable all-around qualities common to good gas heating salesmen, the Bryant plan for the scientific selection of sales personnel promises to be of outstanding service to the gas industry.

WPB REMOVES RESTRICTIONS

While many War Production Board controls affecting the gas industry and its customers have already been lifted there are still some hurdles to be jumped before civilians can buy any large quantity of new gas appliances. Just before this issue went to press, WPB revoked order L-185, thus removing restrictions on the manufacture of water heaters. The agency estimated that the revocation would result in a slight increase in the number of heaters available for civilians this year.

Previously WPB virtually lifted its three-year ban on the manufacture of household gas and electric refrigerators by authorizing initial production at the rate of 265,000 a quarter for the last two quarters of 1945. Officials indicated, however, that few of the 530,000 refrigerators would be made available to the public through normal retail channels. Initial production, WPB said, would be added to the nation's stockpile reserved for hospitals, blood banks and other essential users.

Among other WPB orders revoked in May are the following:

L-174—Manufactured Gas.
L-299—Power Boilers.
L-22—Furnaces and Furnace Controls.
L-42—Schedule 3 Low Pressure Heating Boilers and Schedule 6 and 8 covering Radiators, Supply Valves, etc.
PR-23—Amended to permit manufacturers to make experimental models, test, and exhibit them.
L-182—Commercial Cooking and Food Plate Warming Equipment.
M-9-C—Copper.
L-173—Furnaces, Floor and Wall.
L-187—Boilers, Cast Iron.
M-126—Iron & Steel (Conversion Burners).
L-199—Range Boilers and Hot Water Storage tanks.

History of Gas Range Is Magazine Feature

A HIGHLY interesting and informative article tracing the history and development of the gas range appeared in the May issue of *What's New in Home Economics.* Entitled "Saga of the Gas Range," this feature by Margaret Partlow Graham carries colored illustrations of gas ranges dating from 1880 until the present day. It gives dates and descriptions of outstanding developments and refinements that have made the gas range superior in the cooking field.

Reprints of the article are being distributed to all member companies of the American Gas Association by the Committee on National Advertising.

St. Louis Pipe Break Brings Emergency

FLOOD waters about 80 miles south of the city caused a break in the natural gas pipeline supplying St. Louis and environs, near midnight, April 13. All industrial plants using straight natural gas were without service for 87 hours.

Residential, commercial and some industrial plants, served with mixed gas were supplied by the manufacturing plants of the Laclede Gas Light Company. When the outage occurred, the Laclede immediately placed in operation four water gas sets, held in readiness as stand-by equipment and began enriching the coke oven gas produced in Carondelet with butane storage.

The outage was prolonged when partial repairs to the line were swept away by a second onrush of waters, which made it necessary to make appeals for the conservation of gas, through the news columns of the three metropolitan papers and during news broadcasts of radio stations. Cooperation on the part of the residential customers is believed to have helped materially in keeping down the sendout on Monday morning, April 16.

In addition to the extra production from the water gas sets, and the supply of butane normally kept on hand, the company used 126,000 gallons of butane and propane shipped from the Phillips Petroleum and Shell Oil Company refineries at Wood River and East St. Louis, Illinois.

Economics of Gas House Heating

Fundamental factors to be considered when analyzing the heating load and data on the selection of the most economical gas production methods for supplying it

This is the third in a four-part study of the "Economics of Gas House Heating." Parts I and II appeared in the April and May issues. The concluding installment, to be published in the July-August issue, will analyze a few typical gas companies to show the application of the fundamental factors previously discussed. Investments for most economical processes will be developed for 10% saturation of house heating.

BY HALL M. HENRY*

Director of Gas Operations, Negea Service Corp., Cambridge, Mass.

PART III

Hall M. Henry

IN Part I of this series of studies of "Factors Relating to Economics of House Heating" a simple formula for determining the overall costs per M.C.F. of producing gas was developed. In Part II certain characteristics of the heating load were presented. Part III will show how Parts I and II can be used to determine the relative costs of supplying the heating load using different gas manufacturing processes and how these costs will vary depending on how much of the total heating load is supplied by one gas and how much by another.

To illustrate the principles involved, the following data for Company G (Indianapolis, Indiana) has been compiled:

Data:

Maximum degree-day day (past 14 years)	74
Largest consecutive 3-day average degree-day day	65
Maximum 10-year average degree-day day	42
Normal seasonal degree days	5298
†Seasonal degree days above 42 = 157 or	2.9%
†Seasonal degree days above 30 = 653 or	12.3%
†Seasonal degree days below 43 = 5141 or	97.1%
†Seasonal degree days below 31 = 4645 or	87.7%

Assumed Unit Factors:

(1) Water gas plant—$150.00 per M.C.F. daily capacity.
(2) Butane or propane air diluting and mixing equipment $5.00/M.C.F./day.
(3) Hydrocarbon water gas process $40.00 per M.C.F. daily capacity.
(4) Cost of storage for butane 88¢ per M.C.F. of 540 B.t.u. gas.
(5) Cost of storage for propane $1.90 per M.C.F. of 540 B.t.u. gas.
(6) Cost of carburetted water gas in holder —30¢ per M.C.F.
(7) Cost of butane or propane—6¢ per gallon.
(8) Labor and maintenance costs for propane or butane air = 2¢/M.C.F.
(9) Butane 5.5 gallons per M.C.F. of 540 B.t.u. gas.
(10) Propane 6.0 gallons per M.C.F. of 540 B.t.u. gas.
(11) Fixed charges @ 13%/year on plants and equipment.

Calculated values of "L" for certain *Base Blocks* and *Peak Blocks* of maximum total daily demand.

Note: "L" is the number of days' use per year of plant daily capacity.

(a) Value of "L" for total heating load:

$$L = \frac{\text{seasonal "degree days"}}{\text{daily peak degree day}} = \frac{5298}{65} = 81.5$$

Largest consecutive 3-day average degree-day day.

(b) Value of "L" for Peak Block of maximum total daily demand above 30:

$$L = \frac{653}{(65-30)} = 18.6$$

(c) Value of "L" for Base Block below 31 degree-day day:

$$L = \frac{4645}{30} = 154.8$$

(d) Value of "L" for Peak Block of maximum total daily demand above 42 degree-day day:

$$L = \frac{157}{(65-42)} = 6.8$$

(e) Value of "L" for Base Block below 43 degree-day day:

$$L = \frac{5141}{42} = 122.4$$

Using the value of "L" i.e. Number of days' use per year of daily plant capacity for the different Peak and Base Blocks and the formula:

$$U = \frac{FPt}{L} + FS_Lg + H$$

Where:

U = overall cost per M.C.F.
F = annual fixed charge (rate)
P = unit cost per M.C.F. daily plant capacity
t = ratio of consumption per degree day on cold day to average day
S_L = cost per M.C.F. of 540 B.t.u. gas —for storage of butane or propane
g = ratio of storage capacity to annual use
H = holder cost of gas

we can determine the relative overall costs of gas per M.C.F. when different kinds of gases are used for the base and peak loads of heating. These overall costs are:

(I) Cost per M.C.F. of using 100% carburetted water gas to supply the heating load:

From the data and assumed unit factors we have the following values for the different elements of the formula

$$U = \frac{FPt}{L} + FS_Lg + H$$

P = $150
F = .13
L = 81.5
H = $0.30
t = 1 (Assumed the consumption per degree day is same on coldest day as for the average day)
(FS_Lg) does not apply for carburetted water gas costs

Hence the overall costs per M.C.F. are:

$$U = \frac{.13 \times \$150}{81.5} + \$0.30 = \$0.239 + \$0.30 = \$0.539 = 53.9¢ \text{ per M.C.F.}$$

(II) Now let us see what the overall costs are when carburetted water gas is used for the base block of daily demand below 43 degree-day day and other gases for the peak block of the maximum total daily demand above 42 degree days. (For this example we are ignoring (See Note I at end) the techni-

*Chairman, Market and Economic Research Group of the American Gas Association's Committee on Postwar Planning.
†Note: These are 14-year averages.

cal problem involved in using butane or propane air to the extent indicated.)

(a) Overall costs using carburetted water gas and butane-air:

(1) The cost of carburetted water gas is:

$$U = \frac{.13 \times \$150}{122.4} + \$0.30 = \$0.459 \text{ or}$$

$= 45.9¢$ per M.C.F.

(2) Cost of butane-air:

$$U = \frac{FPt}{L} + FS_Lg + H$$

$F = .13$
$P = \$5.00$
$L = 6.8$
$S_L = \$0.88$
$g = 1$ (That is storage capacity equals annual use)
$H = (5.5 \times .06 + .02) = \$0.35$
$t = 1$

$$\therefore U = \frac{.13 \times \$5.00}{6.8} + .13 \times \$0.88 + \$0.35$$

$= \$0.559$ or $= 55.9¢$ per M.C.F.

Hence the combined overall costs are:

Butane-air is 2.9% of total load or $2.9\% \times 55.9¢ =$	1.6¢
Carburetted water gas is 97.1% of total load or $97.1\% \times 45.9¢ =$	44.6¢
$\therefore$ Overall combined cost per M.C.F. $=$	46.2¢

(b) Overall costs when using carburetted water gas and propane-air:

(1) Carburetted water gas same as II(a) or 45.9¢ per M.C.F.

(2) Propane-air:

$$U = \frac{FPt}{L} + FS_Lg + H$$

$F = .13$
$P = \$5.00$
$L = 6.8$
$S_L = \$1.90$
$g = 1$
$H = (6 \times .06 + .02) = \$0.38$
$t = 1$

$$\therefore U = \frac{.13 \times \$5.00}{6.8} + .13 \times \$1.90 + \$0.38$$

$= \$0.722$ or $= 72.2¢$ per M.C.F.

and the combined overall costs are:

Propane-air is 2.9% of total load or $2.9\% \times 72.2¢ =$	2.1¢
Carburetted water gas is 97.1% of total load or $97.1\% \times 45.9¢ =$	44.6¢
$\therefore$ Overall combined cost per M.C.F. $=$	46.7¢

(c) Overall costs when using carburetted water gas and hydrocarbon water gas (butane as fuel)

(1) Carburetted water gas same as before $= 45.9¢$/M.C.F.

(2) Hydrocarbon water gas using butane:

$$U = \frac{FPt}{L} + FS_Lg + H$$

$F = .13$
$P = \$40.00$
$L = 6.8$
$S_L = \$0.88$
$g = 1$
$t = 1$
$H = (5.5 \times .06 + .02) = \$0.35$

$$\therefore U = \frac{.13 \times \$40.00}{6.8} + .13 \times \$0.88 + \$0.35$$

or $= \$1.22$ per M.C.F.

The combined costs are:

Hydrocarbon water gas is 2.9% of total or $2.9\% \times 1.22 =$	3.5¢
Carburetted water gas in 97.1% of total or $97.1\% \times 45.9¢ =$	44.6¢
$\therefore$ Overall combined cost per M.C.F.$=$	48.1¢

(d) Overall costs when using carburetted water gas and hydrocarbon water gas (propane as fuel)

(1) Carburetted water gas 45.9¢/M.C.F.

(2) Hydrocarbon water gas using propane:

$$U = \frac{FPt}{L} + FS_Lg + H$$

$F = .13$
$P = \$40.00$
$t = 1$
$S_L = \$1.90$
$g = 1$
$L = 6.8$
$H = (6 \times .06 + .02) = \$0.38$

$$\therefore U = \frac{.13 \times \$40.00}{6.8} + .13 \times \$1.90 + \$0.38$$

or $= \$1.39$ per M.C.F.

The combined costs are:

$2.9\% \times \$1.39 =$	4.0¢/M.C.F.
$97.1\% \times 45.9¢ =$	44.6
$\therefore$ Overall combined costs $=$	48.6¢/M.C.F.

(e) If carburetted water gas were used for the peak block above 43 degree-day level the costs per M.C.F. for this portion would be:

$$U = \frac{.13 \times \$150}{6.8} + \$0.30$$

$= \$3.16$ per M.C.F.

This compares with:

55.9¢ if butane-air were used

72.2¢ if propane air were used

$1.22 if hydrocarbon water gas using butane were used

$1.39 if hydrocarbon water gas using propane were used

These figures clearly show the savings in production costs would be greatest if butane or propane (See Note I at end) air could be used to handle the peak block above 43 degree-day day. However it is impossible to use as much of these gases as has been indicated although hydrocarbon water gas can be used for 100% substitution of carburetted water gas. Each company will have to determine the extent that the different gas may be used.

(III) Now let us determine the relative costs when carburetted water gas is used for the base block of daily demand below 31 degree-day day and other gases for the peak block above 30 degree-day day.

(a) Overall costs when using carburetted water gas and butane air

(1) Carburetted water gas:

$$U = \frac{.13 \times \$150}{154.8} + \$0.30 = \$0.426 \text{ or}$$

$= 42.6¢$ per M.C.F.

(2) Butane air

$$U = \frac{.13 \times \$5.00}{18.6} + .13 \times \$0.88 + \$0.35$$

$= \$0.499$ or $= 49.9¢$/M.C.F.

The combined costs are:

Butane air is 12.3% of total or $12.3\% \times 49.9¢ =$	6.1¢
Carburetted water gas is 87.7% of total or $87.7\% \times 42.6¢ =$	37.4
$\therefore$ Overall combined cost per M.C.F. $=$	43.3¢

(b) Overall costs when using carburetted water gas and propane-air:

(1) Carburetted water gas $= 42.6¢$ (See III (a) 1)

(2) Propane-air:

$$U = \frac{.13 \times \$5.00}{18.6} + .13 \times \$1.90 + \$0.38$$

City To Have Central Heat

● Citywide central heating for Chisholm, Minn., will become a reality after materials are made available for construction of plant and distribution lines. Chisholm, which had a 1940 population of 7,478, is in St. Louis County, in the Mesabi iron country. Virginia, Minn., in the same county, has already had notable success with central heating.

A franchise for a steam and electric generating plant which is expected to solve all of Chisholm's "domestic, commercial, and industrial heating problems" has been awarded to John J. Dwyer of Duluth. The system will be cooperatively owned.

In voting the franchise, Chisholm's council was influenced by several factors: the value of the plant as a postwar employment project; the freeing of the city from the bane of smoke and soot; utilization of extra basement space after individual furnaces have been removed; economy in home construction; an overall reduction in the community's fuel consumption, which is estimated at about 25%.—*Business Week.*

$= \$0.662$ or $= 66.2¢$ per M.C.F.

The combined costs are:

$12.3\% \times 66.2¢ =$	8.1¢
$87.7\% \times 42.6¢ =$	37.4
∴ Overall combined cost per M.C.F. =	45.5¢

(c) Overall costs when using carburetted water gas and hydrocarbon water gas butane as fuel

(1) Carburetted water gas = 42.6¢/M.C.F.

(2) Hydrocarbon water gas – butane

$$U = \frac{.13 \times \$40.00}{18.6} + .13 \times \$0.88 + \$0.35$$

$= \$0.74 = 74.¢$ per M.C.F.

Combined costs:

$12.3\% \times 74.0¢ =$	9.1¢
$87.7\% \times 42.6¢ =$	37.4
∴ Overall combined cost per M.C.F. =	46.5¢

(d) Overall costs when using carburetted water gas and hydrocarbon water gas-propane as fuel

(1) Carburetted water gas = 42.6¢ per M.C.F.

(2) Hydrocarbon water gas – propane

$$U = \frac{.13 \times \$40.00}{18.6} + .13 \times \$1.90 + \$0.38$$

$= \$0.899$ or $= 89.9¢$ per M.C.F.

The combined costs are:

$12.3\% \times 89.9¢ =$	11.1¢
$87.7\% \times 42.6¢ =$	37.4
∴ Overall combined costs per M.C.F. =	48.5¢

(e) If carburetted water gas were used for the peak block above 30 degree-day level the costs per M.C.F. for this portion would be:

$$U = \frac{.13 \times \$150.00}{18.6} + 0.30$$

$= \$1.349¢$ per M.C.F.

This compares with:

49.9¢ per M.C.F. if butane-air is used for this portion

66.2¢ per M.C.F. if propane-air is used for this portion

74.0¢ per M.C.F. if hydrocarbon water gas – butane is used for this portion

89.9¢ per M.C.F. if hydrocarbon water gas – propane is used for this portion

Summary of Relative Costs

The table below shows the overall costs per M.C.F. for gas for heating using different combinations of gases and different base and peak blocks.

Selection of Most Economical Base Block and Peak Block To Be Supplied by Different Gases

No attempt has been made thus far to determine the most economical base block and peak block of the maximum total daily demand that should be supplied by the different gases for the assumed unit cost factors. It is evident from a study of the comparative overall costs for the two selected base and peak blocks that the costs were less for all the combinations at the 30 degree-day breaking point. This however does not mean that this is the most economical breaking point for all of the combinations studied. Let us determine the most economical base block and peak block for the different combination of gases. This can very easily be done by using the formula:

$$U = \frac{FPt}{L} + FS_{Lg} + H$$

To do this we apply in the formula all of the known values with the exception of "L" and set the values of "U" for one gas equal to the value of "U" of another. Thus for:

Carburetted water gas

$$U = \frac{.13 \times \$150}{L} + \$0.30$$

$$= \frac{\$19.50}{L} + \$0.30$$

Butane-air

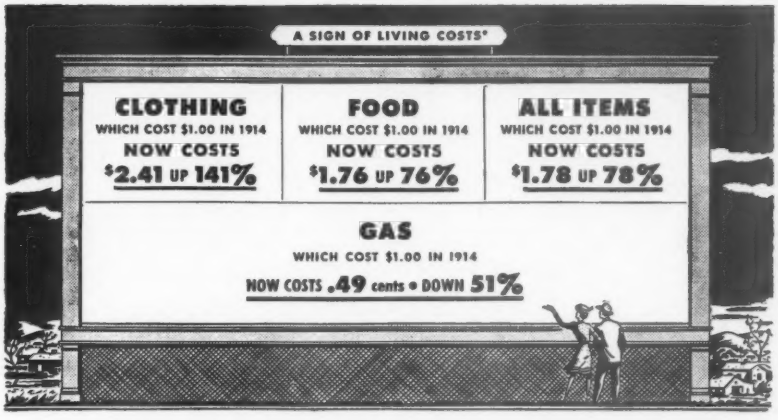
$$U = \frac{.13 \times \$5.00}{L} + .13 \times \$0.88 + \$0.35$$

$$= \frac{\$0.65}{L} + \$0.464$$

Now placing the equations equal to each other and solving for "L" we have:

	100% Carburetted Water Gas	Using 42 Degree-Day Level	Using 30 Degree-Day Level
I 100% Carburetted Water Gas	53.9c	—	—
II Carburetted Water Gas and Butane-Air	—	46.2c	43.5c
III Carburetted Water Gas and Propane-Air	—	46.7c	45.5c
IV Carburetted Water Gas and Hydrocarbon Butane	—	48.1c	46.5c
V Carburetted Water Gas and Hydrocarbon Propane	—	48.6c	48.5c

A Wartime Lesson in Living Costs



Study this wartime Billboard

**The Cost of Living Figures are based on U. S. Department of Labor statistics. The Cost of Gas is based on rates paid by the average residential customer in San Francisco.*

Prices of most everyday items always rise in wartime. It has been the same way through two World Wars, with one important exception...your gas service. ••• Since 1914, your domestic gas rate has consistently gone down and stayed down. That is the reason why you are now using many more home appliances and using them for more hours per day than ever before, at the same low cost. ••• In times of peace and war... through depression and prosperity...the P. G. and E. Domestic Gas service has been dependable and cheap.

Most Living Costs Today are UP but the Cost of Gas is WAY DOWN.

P·G·and E· PACIFIC GAS AND ELECTRIC COMPANY

27XW-545

This unique advertisement of the Pacific Gas and Electric Company, San Francisco, shows how gas has reversed the cost-of-living trend

TABLE III G. Co. G—Indianapolis, Indiana

VALUE OF "L" PER D.D. SEGMENT

No. of Days with D.D.'s over

Daily D. D.'s....	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
1930–31.....	69	56	50	38	37	29	28	25	24	21	21	15	15	10	10	7	5	3	3	2	2	2
1931–32.....	38	31	29	23	20	19	18	13	12	12	12	11	11	10	10	7	6	5	5	5	4	4
1932–33.....	60	51	49	45	43	38	37	33	32	27	25	18	18	17	17	13	11	10	10	7	7	5
1933–34.....	73	65	63	56	53	47	46	42	40	31	28	24	23	22	20	18	16	16	15	12	12	10
1934–35.....	65	59	56	46	41	33	31	24	24	19	19	16	16	13	12	8	7	5	5	3	3	2
1935–36.....	88	81	79	69	68	61	58	52	50	46	44	41	40	38	37	34	34	32	31	29	28	25
1936–37.....	74	68	67	60	58	47	42	30	28	22	18	12	9	8	8	4	4	4	3	1	1	1
1937–38.....	67	54	52	47	44	37	34	29	27	26	23	21	20	16	14	13	12	10	9	7	6	3
1938–39.....	64	56	53	47	43	35	33	27	24	19	18	11	10	5	5	4	4	3	1	1	1	0
1939–40.....	80	70	67	59	58	48	46	40	38	35	33	30	29	23	23	20	20	17	17	16	15	14
1940–41.....	73	64	63	49	46	37	35	29	27	20	20	16	15	12	12	10	8	8	8	7	5	4
1941–42.....	64	57	54	48	47	39	38	36	34	28	28	24	22	20	18	10	10	9	9	8	7	5
1942–43.....	77	71	69	63	60	53	51	45	43	38	37	32	30	28	25	21	20	17	15	14	14	13
1943–44.....	73	63	56	47	41	35	33	26	25	23	23	19	19	17	17	10	10	7	6	6	6	3
Total.....	965	846	807	697	659	558	530	451	428	367	349	290	277	239	228	179	167	146	137	118	111	91
Av. per Yr.....	68.9	60.4	57.6	49.8	47.1	39.9	37.9	32.2	30.6	26.2	24.9	20.7	19.8	17.1	16.3	12.8	11.9	10.4	9.8	8.4	7.9	6.5

Daily D. D.'s....	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
1930–31.....	2	2	1	1	1	0																	
1931–32.....	4	2	2	0																			
1932–33.....	5	5	5	5	5	4	4	3	3	2	1	1	1	1	1	1	0						
1933–34.....	8	7	7	6	6	5	4	3	3	2	1	0											
1934–35.....	1	1	1	0																			
1935–36.....	23	22	21	18	18	14	13	12	12	9	7	7	6	4	3	3	3	1	1	1	1	1	0
1936–37.....	1	0																					
1937–38.....	2	1	1	0																			
1938–39.....																							
1939–40.....	13	12	11	8	8	6	6	5	5	3	3	2	2	2	2	0							
1940–41.....	3	2	1	0																			
1941–42.....	5	4	4	4	4	4	3	2	2	2	2	1	1	0									
1942–43.....	11	9	8	5	5	3	2	2	1	1	0												
1943–44.....	3	2	1	1	1	0																	
Total.....	81	69	63	48	48	36	32	27	26	19	14	11	10	7	6	4	3	1	1	1	1	1	
Av. per Yr.....	5.8	4.9	4.5	3.4	3.4	2.6	2.3	1.9	1.9	1.4	1.0	.8	.7	.5	.4	.3	.2	.07	.07	.07	.07	.07	

$$\frac{\$19.50}{L} + \$0.30 = \frac{\$0.65}{L} + \$0.464$$

$$\$19.50 + \$0.30L = \$0.65 + \$0.464L$$

$$\$0.164L = \$18.85$$

$$L = 114.9$$

Hence for all value of "L" i.e. Number of days' use per year of plant daily capacity, larger than 114.9 carburetted water gas would prove more economical than butane-air and for values of "L" less than 114.9 butane air would be more economical than carburetted water gas.

Similarly the value of "L" for the most economical combination of other gases is determined as follows:

(a) Break-even value of "L" for carburetted water gas and propane-air is:

$$U \text{ (for propane air)} = \frac{.13 \times \$5.00}{L} + .13 \times \$1.90 + \$0.38 = \frac{\$0.65}{L} + \$0.627$$

Now setting the value of "U" for propane-air equal to "U" for carburetted water gas we have:

$$\frac{\$0.65}{L} + \$0.627 = \frac{\$19.50}{L} + \$0.30 \text{ and}$$

solving for L we get

$$L = 57.6$$

Thus when the value of "L" is larger than 57.6 carburetted water gas would prove more economical than propane-air.

(b) Most economical value of "L" for a combination of carburetted water gas and hydrocarbon water gas using butane

$$U \text{ (for hydrocarbon water gas)} = \frac{.13 \times \$40}{L} + .13 \times \$0.88 + \$0.35 = \frac{\$5.20}{L} + \$0.464$$

and setting this value of "U" equal to value of "U" for carburetted water gas we have

$$\frac{\$5.20}{L} + \$0.464 = \frac{\$19.50}{L} + \$0.30$$

or

$$L = 87.1$$

(c) Most economical value of "L" for carburetted water gas and hydrocarbon water gas using propane is found in a similar manner to be:

$$U = \frac{.13 \times \$40}{L} + .13 \times \$1.90 + \$0.38 \text{ (hydrocarbon water gas)} = \frac{\$5.20}{L} + \$0.627$$

or

$$\frac{\$5.20}{L} + \$0.627 = \frac{\$19.50}{L} + \$0.30$$

$$\therefore L = 43.7$$

Summary

The break-even value of "L" for the different combinations are:

	Value of L
Carburetted water gas and butane-air	114.9
Carburetted water gas and propane-air	57.6
Carburetted water gas and hydrocarbon water gas (butane)	87.1
Carburetted water gas and hydrocarbon water gas (propane)	43.7

From an inspection of the value of "L" per segment, i.e. per 1 degree day of peak demand for Company G—Table IIIG—we see that the value of "L" at the 30 degree-day level is 68.9—yet for carburetted water gas and butane-air the breakeven value is 114.9. Thus the base load plant for Company G could be designed for a base block much less than the 30 degree-day level used in these examples. Since we do not have the value of "L" per segment lower than a 30 degree-day day let us look at the propane-air and carburetted water gas combination—here we see that the break-even value of "L" is 57.6 and from Table IIIG—we see that at the 32 degree-day level—"L" has a value of 57.6—hence it would not be as economical to use propane-air for the peak block above 30 as it would for the peak block above 32. This is evident from a comparison of the over-all costs of gas for these two conditions as shown by the following calculations:

Basic Data: Taken from Part II—Table V.

L = for base block below 33 = 149.1
% of degree days per season for base block = 90.2%

L = for peak block above 32 = 15.9
% of degree days per season for peak block = 9.8%

Calculations:

∴ Cost of carburetted water gas

$$U = \frac{\$19.50}{149.1} + \$0.30 = \$0.431 \text{ or}$$
$$= 43.1¢ \text{ per M.C.F.}$$

and for
Propane air:

$$U = \frac{\$0.65}{15.9} + \$0.627 = \$0.668$$
$$= 66.8¢ \text{ per M.C.F.}$$

$\therefore$ The combined over-all costs are:

$9.8\% \times 66.8¢ = 6.5¢/\text{M.C.F.}$
$90.2\% \times 43.1¢ = 38.9$
$45.4¢/\text{M.C.F.}$

This 45.4¢ compares with a combined cost of 46.7¢ when propane-air was assumed to handle the peak block above a 30 degree-day day.

This example shows the importance of determining:

1st. The break-even point for the gases under consideration, i.e. The number of days' use per year of plant daily capacity which would produce the same overall cost per M.C.F. for gas.

2nd. The value of "L" per segment of daily demand—i.e.—The number of days' use per year of 1 degree day of plant capacity at different degree-day levels.

Having determined (1) we can by inspection of data of type shown in (2) establish the most economical base block and peak block of maximum total daily demand that plants using the gases under consideration should be designed to handle. This example serves to show the importance of determining the value of "L" per segment.

Conclusions

It is evident from the calculations made in this Part III that it is possible from the type of data developed in Part II and the formula in Part I to set up data and equations which will enable any company to select the most economical combinations of gases to supply the heating load. In Part IV certain refinements of the technique outlined herein will be shown by an actual application of the data and formula to a New England gas company. In Part IV the technical problems of using butane-air and propane-air will be taken into consideration, *whereas in this section we have been primarily concerned with illustrating principles.*

NOTE 1

According to the Handbook Butane there is a limit to the amount of butane or propane-air that can be mixed with carburetted water gas and still have satisfactory appliance operation. This limit must be determined by each company for their own conditions. The peak load gas must have approximately the same combustion characteristics as the base load gas and these characteristics should be very carefully invested and examined by any company undertaking a study of peak load gas production. Our purpose has been to indicate a technique for the selection of the most economical gas for peak load and not the actual gas to be used.

NOTE 2

Hydrocarbon water gas is 100% interchangeable with carburetted water gas.

Gas Co-Stars in Hollywood Features

June Storey, star of the Republic Productions' "Road to Alcatraz," makes an attractive picture cooking on a modern gas range

Don DeFore teams up with another gas range to do some frying-pan maneuvers in "You Came Along," a Hal Wallis Production

Keen Interest in Domestic Research Marks Local Conference

ENTHUSIASTIC reception of technical papers together with well-attended general and panel sessions, indicating a keen interest in current research at the American Gas Association Testing Laboratories, marked the opening of the regional Domestic Gas Research Conference in Cleveland on May 8-9.

Another such conference was held in New York on May 23 and 24 and a third is arranged for in Chicago on June 6 and 7, under the sponsorship of the Association's Committee on Domestic Gas Research. Conducted on a regional basis in order to comply with regulations of the Office of Defense Transportation, these meetings are giving appliance manufacturers' engineers an opportunity to familiarize themselves with technical data resulting from the research program now in progress and to discuss problems directly with members of the Laboratories staff and members of the research committees.

Kitchen ventilation was perhaps the outstanding topic at the Cleveland meeting. Leon Ourusoff, a member of the Technical Advisory Subcommittee for Domestic Gas Cooking Research, reviewed results already obtained in this study, emphasizing removal of heat, moisture and cooking odors. Dr. R. S. Taylor, of Servel, Inc., contributed an engineering discussion of these three features. Also of lively interest to the delegates was information presented on the design of gas burners. These topics were thoroughly discussed in afternoon panel sessions.

During the general sessions 7 technical papers, were presented by Laboratories staff members. Four others were delivered before the panel sessions where principal discussion took place. William R. Fraser, of the Michigan Consolidated Gas Company, presided at the opening general session and Franklin T. Rainey, of The Ohio Fuel Gas Company, presided on the second day.

J French Robinson, president of the American Gas Association, and John W. West, Jr., assistant managing director, were speakers at the two luncheon meetings.

Paul R. Tappan, chairman of the Technical Advisory Subcommittee for Domestic Gas Cooking headed the panel session on gas cooking research. L. R. Mendelson and K. T. Davis, chairmen of Technical Advisory Subcommittees for Water Heating Research and Central Gas Space Heating Research, respectively, presided over the panel sessions.

A number of manufacturers took advantage of the opportunity presented by the Cleveland Conference to visit the Laboratories and view first-hand research in progress and to consult with staff members. Displays and demonstrations were available of many of the topics previously discussed.

Arrangements for all conferences are being handled by Eugene D. Milener, Secretary of the Committee on Domestic Gas Research.

One of the souvenirs sent to The Brooklyn Union Gas Company by Cpl. Joseph Virostko, a prewar employee of the company, now with the 301st Infantry Division in Germany

Germans Told How To Save Gas

THE eight-page folder, shown above, picked up in Germany by Cpl. Joseph Virostko, an employee of The Brooklyn Union Gas Company, illustrates one of the gas conservation steps taken by the Germans. Apart from the direct instructions to save gas, the idea of putting one pot over the other gives a picture of the extremes to which the enemy was put because of the Allies successful destruction of transportation, coal mining and gas-making equipment.

Each example illustrated above has two parts; the first showing how to save gas and the second, why it should be saved. Each of the latter gives the number of hand-grenades, cartridges, etc. which could be made with the amount of gas saved each month. As an example, the illustration in the lower left-hand corner above is translated as follows:

"Daily, having reached the boiling point, turn the gas flame very low, less than the half-way mark. This will save enough gas per month to produce three rifle barrels."

Other gas-saving suggestions include lighting the pilot light of the automatic water heater only four hours per day; cleaning gas burners regularly; using the right size pot for canning; taking a shower only once a month instead of a warm tub-bath.

The wind-up (upper left) points out that if each individual saves only one cubic meter of gas per month, in one year a saving of 144 million cubic meters would result, or enough for 22,500 tanks, 63,000,000 rifle barrels; 9,000,000,000 hand-grenades or 20,000,000,000 cartridges.

A.G.A. Endorses War Council's Natural Gas Proposals

THE American Gas Association has endorsed the declaration of the Petroleum Industry War Council that any national oil policy should include proposals governing the production of natural gas, by the adoption of the following resolution:

"RESOLVED, that the American Gas Association, acting by and through its Executive Board, hereby records its belief that in recognition of forthcoming hearings by the Senate of the United States and by any other Federal agency in the matter of a national policy on the conservation and utilization of natural gas, that such national policy should embrace the principles enunciated in the following supplement of a preliminary report on National Petroleum Policy which supplement was adopted by the Petroleum Industry War Council on May 16, 1945."

The Petroleum Industry War Council, the war agency created by Secretary Ickes to advise the Government on oil matters, proposes a broad set of principles to be applied to natural gas production, which it declares should be incorporated into any proposed national policy for petroleum.

These proposals, which were approved by the American Gas Association, advocate private ownership of the oil and gas business, State jurisdiction over conservation and waste of oil and gas; competitive effort in the search for oil and gas with freedom of individual action and enactment of new state legislation or adaptation of existing statutes to promote development by producers of cycling repressuring projects.

The report held that opposition by some states to export of natural gas to other states is without legal basis, but that jurisdiction of Federal agencies over production and sale at the point where its interstate movement commences must remain with State regulatory agencies. The report held that the end use of gas should not be regulated since competition is the best arbiter in determining the best use of gas. It favored optional treatment of intangible drilling costs and the retention of present depletion allowances for tax purposes and removal of the threat of double taxation on cycling and repressuring projects.

"Completed Home" Drive Starts

PREDICTING the building of 90,000 one and two-family houses in New York City and Westchester County by 1954, Consolidated Edison Company May 7 announced a postwar program to make these structures "completed homes"—that is, buildings initially equipped with all modern conveniences of living, the whole sold as a living unit.

The company has invited the cooperation of other industries in the movement and announced a series of meetings to present the idea to banks, savings banks, savings and loan associations, architects and builders.

Defining the "completed home," L. A. Scofield, general sales manager of the Company, said it must be well built, good looking, well planned and convenient to care for, be easy to operate and economical to maintain and be financed by the lending institutions as one transaction, including all essential equipment.

L. A. Scofield, general sales manager, Consolidated Edison Company of New York, Inc., presenting "The Completed Home Plan"

Kitchen of Tomorrow Pictured For Hartford Home Economists

Gas appliance exhibition on view during Hartford's Conference for Home Economics

THE Kitchen of Tomorrow" was the theme of a conference of the home economists of Hartford and vicinity sponsored by the Hartford Gas Company, Hartford, Conn., the evening of May 9 under the leadership of Mrs. Arra Sutton Mixter, director of the home service division of the company.

Mrs. Mixter stated that the meeting was for the purpose of giving the home economists a chance to get acquainted with each other and with new developments in their field, and added that she hopes it may become an annual conference. About 130 home economics teachers, dietitians, and home service agents attended the smorgasbord and meeting. Speakers included Miss Eleanor Howe, editor-in-chief of the home economists' magazine, "What's New in Home Economics"; Dr. Helen Judy Bond, head of the Department of Home Economics of Teachers College, Columbia University; and Vinton Potter, director of the New Freedom Gas Kitchen Program of the American Gas Association of New York City.

Three Ideas

"There are three groups working on the kitchen of tomorrow, each with its own idea of what that kitchen shall be like," said Miss Howe. "These are industry, home economists, and housewives. Industry offers what might be called the glorification of the kitchen. This group speaks of the new equipment which the kitchen will have, emphasizing the appearance, and up-to-date gadgets. It speaks of the grouping of the kitchen, and the shape of that room.

"Home economists seek to make the kitchen practical. Sometimes industry is inclined to forget that women are going to be working in the kitchen, and to overlook the little things. Home economists think of making the kitchen easier to work in, emphasize such things as height of working surfaces, use of space, ease of keeping the kitchen clean and saving steps."

"The homemaker," she continued, "wants the individual touch. She thinks about the color scheme, of the accessories of the kitchen, of the people who will use the kitchen. She asks where she can put the children so that they will be under her eye, but not under-foot.

"The home economist must keep all of these views in mind, but she must first of all remember to start where the homemaker is. She cannot expect to achieve a goal by one leap, but must take it step by step, and never overlook the fact that housewives must budget, buying things one at a time, not all at once."

Tappan Sales Meeting

A three-day sales convention, held for presentation and discussion of the gas range situation has been concluded at the Tappan Stove Company, Mansfield, Ohio.

Guest speakers included H. Vinton Potter, director of the New Freedom Gas Kitchen; James I. Gorton, CP Promotional Director, Associated Gas Appliance and Equipment Manufacturers; and Harold Van Doren, author of the book, "Industrial Design."

Hostess and speakers at Hartford dinner for Home Economists. Left to right: Dr. Helen Bond, Columbia University; Mrs. Arra Sutton Mixter, home service director, Hartford Gas Co.; H. Vinton Potter, director, New Freedom Program; Eleanor Howe, What's New in Home Economics

Group of home service visitors at the Conference. Left to right: Ada Bessie Swann, Woman's Home Companion; *Mrs. Lillian Dunbar, home service director, New England Gas & Elec. Co., Cambridge; Sue Mack, home service director, Boston Consolidated Gas Co.; Lyda Flanders, home service director, Worcester Gas Co.; Jessie McQueen, American Gas Association*

Another Viewpoint of Postwar Kitchens

IDEAS reflected in a survey of postwar kitchen needs, reported in the May MONTHLY, brought an interesting dissent from Philip Mosher, vice-president of the St. Charles Manufacturing Company, manufacturer of cabinets and custom-built kitchens. The following is quoted from his letter of May 21:

"I have just completed reading on page 232 of your May issue the item entitled 'Postwar Kitchen Essentials,' which quotes Mrs. Margaret McCordic, home management specialist at the University of Wisconsin. We believe that some of the ideas expressed in this article are impractical.

"First, she advocates foot-pedaled hot and cold water taps for the sink. Unless some method of installation is developed, other than against the wall such as I have seen, these would have to be operated from a sitting position. We have found in surveying women that 75% of this work at the sink is done by preference while standing in an upright position. We have also always considered foot pedal faucets as being a fine invitation to young children to have themselves a nice playground.

"Second, while we are not appliance manufacturers, we can see some advantages to foot pedals for opening range and refrigerator doors, particularly when you approach either with both hands full, but there again you have the disadvantage of having something which would be an invitation to young children to have a lot of fun with, much to the detriment of the baking in the oven and the operation of a mechanical refrigerator.

"Third, regarding cabinet doors sliding up or sideways, we have never been able to figure out how vertical sliding doors could be operated successfully on wall cabinets. In order to push them to the top of the cabinet, it would be necessary to mount steps, likewise when closing them, it would again be necessary to mount steps, which we consider a greater inconvenience than having swinging doors which open a full 180°. Horizontal sliding doors in cabinets are nothing new; in fact, the kitchen cabinet company with which I was associated in 1928 used that feature temporarily, but finally discontinued it because we found that in order to mount the door properly, the guiding channels had to be in exact parallel alignment, and we also found that when attaching cabinets to a wall, if there is any unevenness whatsoever in the wall, and in most cases there is, then the cabinet would be racked out of square slightly and the doors would bind in the tracks to such an extent that it was in many cases impossible to operate them. Consequently, we discontinued this style of door, as we felt that anything which requires perfect installation and operation loses a large percentage of its practicality.

"Fourth, regarding the request for slide-out steps built into the drawer units for use in reaching the wall cabinets, this idea would be very fine with one exception. If you put steps of this type in just one location in the base assembly, it would serve only the wall cabinet space immediately above that base section. The only way in which you could serve all of the wall cabinet storage space would be to have these slide-out steps in each base section, and if you did this, you would eliminate 80% of available storage space in your base sections. To us it always appeared more practical to arrange for a movable two- or three-step folding ladder than to sacrifice practically all of your base storage space for the use of concealed steps.

"We might mention that these deductions of ours are not based upon our own theory, but upon investigation and questioning which we have actually done, and surveys which we have made among women."

Columbia Holds Annual Safety Meeting

Manufacturers Light and Heat Co. was host in Pittsburgh for this recent annual meeting of the Safety Committee of the Columbia Gas & Electric Corp. Safety directors and other officials concerned with public utility safety programs exchanged experiences pertaining to safety problems and made plans for the annual Columbia System "No Accident Month" soon to be observed.

Attending the Pittsburgh conference were, back row, left to right: W. H. Adams, safety director, Pittsburgh group, Columbia System; J. E. Humphreys, Ohio Fuel Gas Co.; Dan J. Egan, personnel director, Pittsburgh group; J. R. Hussey, R. E. McEldowney, Jr., safety director, and J. J. Martin, United Fuel Gas Co., Charleston, W. Va.; P. A. Alberty, safety director, Ohio Fuel Gas Co.; R. H. Krone, safety director, Cincinnati Gas & Electric Co.; G. J. Cox, secretary of the committee; W. M. Reeser, Atlantic Seaboard Corp., Beckley, W. Va. and C. A. Aaron, of Manufacturers. Seated left to right: E. J. Egan, vice-president, Manufacturers; Betty Haines, Manufacturers; F. H. Deckman, insurance engineer, Columbia System, Columbus; F. B. Flahive, chairman of the committee, New York City, and Charles E. Bennett, president, Manufacturers Light and Heat Company.

A-B Stoves Becomes Part of Detroit-Michigan

AS a result of a reorganization plan submitted by the Detroit-Michigan Stove Company, since April 25, A-B Stoves, Inc., of Battle Creek, Mich., has operated as A-B Stoves Division of the Detroit-Michigan Stove Company. Mr. Wendell L. Smith, president of A-B Stoves, Inc. was elected to the board and also an executive vice-president of the Detroit-Michigan Stove Company. He will continue as the executive officer of the A-B Stoves Division and will retain the present personnel.

John A. Fry, president of the Detroit-Michigan Stove Company, announces that this is the first step taken in carrying out a comprehensive program for the postwar period.

New Freedom Kitchen Plan Book Out

A HARD-HITTING "Plan Book for Action," outlining an aggressive promotional program, has just been released by H. Vinton Potter, director of the New Freedom Gas Kitchen program, to nearly 800 gas utilities throughout the nation. This program is sponsored jointly by the American Gas Association and the Association of Gas Appliance and Equipment Manufacturers.

The plan book correlates promotional materials now available and calls for the initiation of immediate and aggressive sales steps preparatory to the release of kitchen equipment. Color films, local newspaper mats, a photograph service, radio scripts, and outdoor posters, are among the many materials for promotion being made available as part of a complete promotion package.

The plan book reveals that the major emphasis of the current program will be on the industry's New Freedom Gas Kitchen, focal point of the gas industry's national advertising program, now appearing in a large list of leading magazines.

Prospective new home owners are showing keen interest in a Portland (Ore.) Gas & Coke Company sponsored radio program, "Let's Talk Houses." The picture, taken at the first broadcast, shows builders Herman Schmidt, Paul Bonelli, Otis Vowels and George Crow seated, from left. Standing is Fred Eichorn of KXL, moderator.

"Let's Talk Houses" Is Radio Hit

AN original radio program, "Let's Talk Houses," sponsored by Portland (Ore.) Gas Coke Company and featuring members of the Portland Home Builders' Association, is currently building good will and prestige for all concerned.

Each weekly broadcast covers a different phase of home building and features a panel discussion by a different group from the Home Builders' Association. Only an occasional outside participant is necessary, inasmuch as associate and affiliate members represent allied building trades and the building supply dealers.

Brief commercials tie in with gas for heating, cooking, water heating and refrigeration in tomorrow's home.

The half-hour program, aired without script, is informal but well directed by Fred Eichorn of station KXL, who, as moderator, puts the questions and recognizes speakers as they raise their hands.

Scheduled topics for the 13 weekly broadcasts scheduled to run through midsummer are: How to Go About Getting a Home Built; Financing the Home; Relations of Contractor and Architect; Actual Construction; Use of Materials; Making Plans; New Gadgets for Postwar Homes; Plumbing, Heating and Lighting; Interior Finishing; Landscaping; What Women Want in a Home; and Review and Conclusions.

Questions also are invited from the listening audience and are answered on subsequent broadcasts. A keen interest was evident early in the series with some of the participating builders receiving personal inquiries after their broadcasts.

Credit for originating the idea of the broadcast is given by Portland Gas & Coke Company to the Portland Home Builders' Association.

Killing time is not murder. It is suicide.—*Northwestern National News.*

First GI Home Built Is All-Gas Equipped

FIRST "GI Home" in Hartford, Conn., built for a war veteran will be an all-gas home according to the Hartford Gas Company. A veteran of both world wars, Corporal John J. Fitzgerald, will occupy the home which is now under construction under the terms of the GI Bill of Rights.

A five-room colonial-type house, it will include gas all-year air conditioning and one of the first coordinated New Freedom Gas Kitchens to be constructed. Ventilation will be built-in to remove cooking odors at the source.

In a large newspaper advertisement, The Hartford Gas Company quotes Mrs. Fitzgerald as follows:

"We have used gas cooking and gas refrigeration for many years. John and I thoroughly talked over the plans for our new home. We both felt that gas appliances would be the best investment from every point of view. I consider myself pretty lucky to be one of the first with a New Freedom Gas Kitchen."

From Home Service to Naval Service

FROM home service to naval service is the wartime broad jump made by Harry Booth, cooking school representative, sales department, Southern California Gas Company, Los Angeles. Landing in the Nets and Booms division of the Navy, Booth spent one year at Hueneme harbor, California. Now, as motor machinist (MO MM 3/c) he's freezing-it-out in a refueling harbor at a little island located some twenty-five miles from Adak, in the Aleutians. According to the map, that's closer to Russia than home soil.

Before enlistment in 1942, Navyman Booth was the man behind scenes, as well as the man out front, with Modern School of Gas Cookery conducted by the Home Service Department. He supervised gas range hook-ups and placement of stage sets; he acted as stage manager, and, when the curtain went up, there he was acting as master of ceremonies.

Recent letters state that in his present location there isn't a gas range in an igloo, and the nearest thing to a modern school of gas cookery is an active volcano eleven miles behind camp. Booth described the island as devoid of trees, but covered with vast expanses of grass and shrubs which, in summertime, show up in the seven inches of top soil. This is the tundra. Here lives the beautifully furred red fox—the island's only animal. However, the place is a fisherman's paradise: streams bulge with trout, and, in such unbelievable numbers, that the Navy's aurora borealis piscatorians throw back any catch under twelve inches!

Booth finishes his eighteen months stint this fall. He hopes to spend either Thanksgiving or Christmas back home—in L. A.!

That old pre-war "Black Magic." When the Home Service cast of the Modern School of Gas Cookery took time-out, Harry entertained with acts of legerdemain. Here he mystifies the audience at a Southern California demonstration with his instantaneous-hot-water act

Harry Booth "Freezing-It-Out" up North. The dog's name is Kiska. He is supposed to be the only living thing on island of that name when our army took over. Further, Harry writes, Kiska is supposed to be a jap-dog but is now on our side

New A. G. A. Members

GAS COMPANIES

Albion Gas Light Company, Albion, Michigan (Floyd A. Rogers)*
Public Service Co. of N. C., Inc., Concord, N. C. (H. S. Dutton)
Public Service Co. of N. C., Inc., Gastonia, N. C. (C. B. Zeigler)
Public Service Co. of N. C., Inc., Statesville, N. C. (B. E. Zeigler)
Puget Sound Power & Light Co., Seattle, Washington (Patrick Johnson)

MANUFACTURER COMPANIES

Dade Drydock Corporation, Miami, Florida (Seymour F. Potter)
Porcelain Steels, Inc., Cleveland, Ohio (D. D. Smith)

HOLDING COMPANY

N. Y. Pa. N. J. Utilities Company, New York, N. Y. (E. W. Morehouse)

INDIVIDUAL MEMBERS

Richard B. Barger, The Hartford Gas Co., Hartford, Conn.
Ruthellen Beach, Southern Counties Gas Co., Whittier, Calif.
Cecil E. Cantrill, Mangrum-Holbrook & Elkus, San Francisco, Calif.
M. R. Chandler, Southern California Gas Co., Los Angeles, Calif.
Royal E. Christiansen, Witco Chemical Co., New York, N. Y.
Arthur D. Church, Pacific Gas & Electric Co., San Francisco, Calif.
F. H. Coble, Southern California Gas Co., Los Angeles, Calif.
Lloyd E. Cooper, California Railroad Commission, San Francisco, Calif.
C. H. Cowart, Remington Rand, Inc., New York, N. Y.
Alec M. Crowell, Miss. Oil & Gas Engineering Commission, Jackson, Miss.
Donald L. Curtiss, Newsweek, New York, N. Y.
D. G. Eldredge, Southern California Gas Co., Los Angeles, Calif.
V. F. Estcourt, Pacific Gas & Electric Co., San Francisco, Calif.
June L. Evers, Southern California Gas Co., Los Angeles, Calif.
Newell E. French, Equitable Gas Co., Pittsburgh, Penna.
S. I. Gleason, James H. Knapp Co., Los Angeles, Calif.
Miss Thelma Hoffman, Shell Development Co., San Francisco, Calif.
Edward F. Hubbard, The Philadelphia Gas Works Co., Phila., Penn.
Albert W. Humm, Hixson, O'Donnell Adv., Inc., New York, N. Y.
Russell H. Jenney, Kentucky West Virginia Gas Co., Ashland, Kentucky
Hamilton Clark King, Rochester Gas & Electric Co., Rochester, N. Y.
Alex W. Lee, City of Birmingham Gas Dept., Birmingham, England
Leila A. Levy, Southern California Gas Co., Los Angeles, Calif.
Walter A. Lier, Southern California Gas Co., Los Angeles, Calif.
Arthur C. Loveny, Rochester Gas & Elec. Co., Rochester, N. Y.
Donald R. MacCollum, Rochester Gas & Electric Co., Rochester, N. Y.
E. E. Manhard, Pacific Gas & Electric Co., San Francisco, Calif.
Omar McDowell, Jr., Rudd Mfg. Co., Cleveland, Ohio
Wm. M. McKay, California Railroad Commission, San Francisco, Calif.
Rodger I. Mendes, Pacific Gas & Electric Co., San Francisco, Calif.
Charles Meriam, The Meriam Instrument Co., San Marino, Calif.
H. R. Mintun, Southern California Gas Co., Los Angeles, Calif.
E. A. Norton, Jas. Graham Mfg. Co., Los Angeles, Calif.
J. E. O'Brien, Pacific Gas & Electric Co., San Francisco, Calif.
O. B. Peacore, Southern Union Gas Co., Dallas, Texas
Louis Possner, Southern California Gas Co., Los Angeles, Calif.
Wm. A. Richardson, San Diego Gas & Elec. Co., Les Mesa, Calif.
Floyd A. Rogers, The Albion Gas Light Co., Albion, Michigan
G. J. Rusher, Southern California Gas Co., Los Angeles, Calif.
H. R. Scott, Union Electric Co. of Illinois, East St. Louis, Ill.
D. D. Smalley, Pacific Gas & Electric Co., San Francisco, Calif.
Gilbert R. Smith, Southern California Gas Co., Los Angeles, Calif.
David D. Taylor, Federal Power Commission, Washington, D. C.
D. S. Whammond, A. O. Smith Corporation, Milwaukee, Wisconsin
Jesse S. Yeaw, Rochester Gas & Electric Co., Rochester, N. Y.

* Names in parentheses are Company Delegates.

Southwest Personnel Conference in June

THE ninth meeting of the American Gas Association Southwest Personnel Conference will be held in the Washington-Youree Hotel, Shreveport, Louisiana, on Tuesday, June 5. M. V. Cousins, personnel director of the United Gas Pipe Line Company, is chairman of the conference.

Critical over-all personnel problems such as experience with revised selective service regulations, wage stabilization, reemployment of veterans, foremanship training, and foreman's relationship to management will be discussed.

Dealer News Makes Its Bow

DEALER NEWS is the name of a new Southern California Gas Company publication which made its initial appearance on the first of May. Edited by members of the Sales Department, it will be sent to gas appliance dealers in Southern California.

The first issue states: "A new, revolutionary change in the merchandising of gas appliances in Southern California, that will offer greater profit opportunities to aggressive Gas Appliance Merchandisers, is definitely in the offing. "Dealer News," supplementing special announcements and bulletins, will bring dealers full up-to-date information on the new program."

It is edited by R. M. Crosby, under the supervision of J. G. Merkle, General Supervisor of Market Analysis and Sales Promotion.

New Bryant Laboratory For Manufactured Gas

A WELL-EQUIPPED 1500 sq. ft. laboratory in nearby Mentor, Ohio, for the testing of appliances under conditions of manufactured gas consumption is the latest addition to the research facilities of the Bryant Heater Company, Cleveland, Ohio. In contrast to Cleveland's natural gas, Mentor is supplied with coke oven gas of 530 B.t.u. with a specific gravity of approximately 0.4. This type of gas corresponds to that specified for tests by the American Gas Association Testing Laboratories.

All new product development at the Bryant Heater Company will be thoroughly tested on both natural and manufactured gas with the aid of these new facilities, as will furnaces, unit heaters and boilers. The Mentor laboratory will also be used for conversion burner testing on solid fuel burning equipment, and for the adaption of Bryant's new automatic safety pilot to single point flash tube ignition for gas ranges, according to W. R. Teller, director of Engineering and Development for Bryant.

Equipment includes benches for control testing and a high temperature oven. In addition to necessary tools and pressure gages, the laboratory also provides four wet test meters, two potentiometers, two slope gages, a sound level meter and a calorimeter. The new laboratory will have no permanent staff, but will be in constant use by Bryant engineers and development men in search of complete performance data.

A Public Utility Credit Policy

A Joint A. G. A.-E. E. I. Customer Activities Report

BY J. GORDON ROSS*

Chairman, A. G. A. Customer Relations Committee

The survey upon which this article is based included companies in ten states, ranging from Coast to Coast. It is significant and authoritative reflecting as it does the policies of a sizeable segment of the industry.

J. Gordon Ross

THE sale of public utilities' services is essentially credit business. Accounts are opened, service made available and later, after meter readings are taken to determine the extent of use, bills are issued and payment is anticipated. In this respect utilities are not unlike other retail credit businesses which may decline to accept an account, whereas utilities may seek to protect themselves against loss by obtaining a security deposit from an applicant whose credit standing is unsatisfactory.

Need for Established Policy

Other retail businesses obtain applications, make credit investigations and establish procedures to govern the opening of accounts, credit authorization and collections as part of their so-called credit policies. The procedures are similar in most retail businesses and they are quite generally known to the credit-seeking public. It seems logical, therefore, for public utilities also to have credit policies embracing applications, deposits and collection procedures which, because they are similar to and not unlike those of other retailers, would be known and understood by our customers and those who seek our services. This need is even more essential when, in addition to selling gas and electricity, we engage in the sale of appliances, coke, repair services, or a dealer cooperative sales plan involving credit responsibilities of the purchasers.

The demands for our services are so universal that some utilities seem to have felt there is no need to change their policies. Even now we find those who decline service until the residential applicant has made a personal call at their offices to sign a formal application and pay the "customary" deposit.

On the other hand, we have those utilities who take no deposits whatever from residential customers, and they neither require nor accept a customer's signature.

Data accumulated in this study seems to support the "middle of the road" policy of securing reasonable information about a new customer, accepting his signature if he calls at the office, and requiring a deposit only when he is known to have an unsatisfactory record. Such a policy makes it possible to establish a record that will enable the utility to know the customer and consequently to apply intelligence and good judgment in subsequent transactions involving credit purchases or delinquent accounts.

First impressions are lasting, and this should be borne in mind in connection with the greeting of new customers. If there is a receptionist, or if others first contact the newcomer, it goes without saying that he should be graciously approached and properly directed to the service representative who will care for his needs. The confidential nature of this interview requires that it be handled in privacy, rather than at a congested counter where others may overhear. Indicative of the trend in this direction is the fact that 61% of the 18 companies recently surveyed accept applications at desks only; 28% accept them at both desks and counters, and only 11% at counters only.

The next consideration is the questions to be asked. Some may feel it to be adequate to ask only the applicant's name, what he wants, and where he wants it. This would scarcely be sufficient to establish a record of the customer that would be of any assistance at a later time. On the other hand, a customer may become annoyed by being required to answer unnecessary questions. Certain fundamental information will be given by the average applicant without offense because it is what he would customarily give to any store from whom he was seeking credit. Obviously we must know his name, where and when service is desired, and other essential information to make it possible to provide the service desired. This information is routine and the name, of course, should be in full, that is, given name, middle initial and last name. Justification for this lies in the fact that we have so many customers with similar names that we must avoid confusing the accounts.

Other questions are asked to a varying degree by most utilities for purposes of further identification of the applicant, to facilitate credit approval, and to, if need be, assist in the collection of the account. For instance, 77% of those surveyed ask the applicant's former address, 77% ask if he had utility service account there, 44% ask the name of the utility which served him, 66% ask his place of employment, and 60% his occupation.

Less frequently asked are the wife's name (33%), how long at former address (33%), badge number of employee (22%), and trade references (22%).

If a customer returns to a locality it is the practice of 72% of the companies to ask the same questions as on the first contact, except that two companies do not repeat if the customer returns within a year. Two companies do not ask any of the above questions unless the customer desires to attempt to establish credit "in lieu of placing the customary deposit."

Obtaining Applicant's Signature

The matter of obtaining the applicant's signature does not seem to any longer be considered an absolute rule. Only 66% report that the signature is required or accepted, while 33% presumably do not get it at all. There are those who contend that the signature adds weight to the original transaction, and, as it inflicts no hardship on the applicant, it should be accepted. The psychological effect of so doing is good, whereas too relax a requirement in this respect is apt to create the impression that it would not be difficult to obtain service under false pretenses.

Applications are accepted by telephone by 88% of the companies surveyed. 12% do not accept applications by phone, but ask their prospective customers to come to the office to apply. Of those who do accept applications by telephone it is of interest to note that an average of 53% of all residential applications are received in this manner, with one company receiving 73% by phone. When telephoned applications are received by those who normally require signatures they are usually obtained by the turn-on man or by mail.

*Rochester Gas and Electric Corporation, Rochester, N. Y.

More than half of the companies responding endeavor to obtain applications in the name of the head of the family, although many will accept the wife's name if requested. All but one company accept requests for transfer of service to a new address by telephone.

Experience in the retail credit granting field has proved that better than 98% of the people are honest and it is not necessarily found that the percentage of dishonest people is greater in any particular locality. Yet it is surprising to learn that 28% of the companies reporting require deposits from most residential customers, with one company requiring deposits from all except property owners with good credit standing. 33% require deposits from most applicants for service moving into certain areas or districts presumably where collection experience has been bad. All but one company (which does not accept any residential deposits) require deposits when they *know* an applicant's credit is unsatisfactory, and 44% require deposits when they are uncertain about an applicant's credit. On the other hand, 66% give service without deposit to *most* residential customers, and 50% do not ask deposits unless they know applicant has a poor credit record.

As a means of determining the credit standing of an applicant 39% of the companies send inquiries to the utility which previously supplied the applicant, but two of them only do this if the previous supplier was a branch or affiliate of their own company.

77% of those reporting refund deposits after a satisfactory record of payment has been established, usually one year. Of those who do not have such a plan, one company retains deposits until service is terminated. In 83% of the companies deposits are accepted by the person who accepts the application, while the others apparently refer the customer to some other person or department for this purpose.

The requirement of a deposit often subjects a new applicant to hardship or at least inconvenience at a time when he is usually confronted with the expense of establishing himself in a new residence. Such a condition may cause him to have an unfavorable, if not definitely hostile, attitude toward the particular utility involved, and perhaps utilities in general. Furthermore, a comparison of the actual net loss due to bad debts of a company having a liberal credit policy with those of a company requiring deposits from most customers may show surprisingly little difference, if any. If this is true, the rigid "deposit demanding" company is not only building ill will for itself and the industry, but is paying unnecessary interest charges and maintaining unnecessary deposit records and reports.

Standard Credit Application

The so-called standard credit application used by most retail stores has, in addition to the customer's name and address, some 33 questions of a highly personal nature concerning the applicant. In the utility field it seems that the *maximum* is about 9 questions other than these having to do with the service characteristics and the plans for making it available. It would seem to be a fair conclusion, therefore, that rather than causing offense by being too inquisitive about our new customers, we have a tendency to be not sufficiently interested in them to obtain the information that will enable us to classify them from a credit standpoint. Consequently, without such classification, all delinquents are subjected to a routine collection procedure which in itself is a source of irritation and a deterrent to good customer relations. Furthermore, if we engage in appliance or coke sales business and do not maintain suitable records to classify those who seek to purchase on credit terms, delays in credit authorization create a lack of desire to deal with us.

While some localities have a large transient or floating population, this is not the usual thing. A high percentage of our customers remain permanently in the same community. Therefore, the establishment of a proper record in these cases, supplemented by actual experience with them in matters of credit purchases or collection activities, is not a difficult job and it does enable the utility to more effectively serve its customers.

Policies and procedures governing credit extension and collection activities have a far-reaching effect on customer relations. It is therefore of prime importance that we recognize and avoid those things that create antagonism. Those who seek utility service will answer reasonable questions and sign an application without offense if the contact is diplomatically and cordially handled. As these things will help to serve him better, it seems wise to obtain them. On the other hand, we may be assured of resentment on the part of the applicant whom we greet coldly and from whom a deposit is demanded because "it is the policy." Equally offensive will the customer find a collection procedure which requires that a final notice be sent whether the bill be $3.00 or $50.00, and the customer a squatter in the shack by the river, or a railroad president on the Avenue.

Loose Policy Breeds Disrespect

The exercise of caution is also needed to prevent a shift too far to the other extreme. A loose policy, having only as its objective the desire to create good customer relations, may have the opposite effect because of the loss of respect for the utility by its customers. There are situations where it is wise to request an applicant's signature and where a deposit should be required. Evidence of this lies in the use of fictitious or improper names to an extent far greater than seems to be realized. For instance, two large companies recently found that about 30% of their recoveries of bad debts was from customers who had used fictitious or misleading names when applying for service. Firm and vigorous action is needed to combat this practice. The great diversity of charge-off percentages, unaccounted for by usual factors, gives reason to feel that collection policies in some cases lack sufficient firmness to create respect for the rights of some utilities. Hence, it may be concluded that our success from a customer relations' viewpoint in matters of credit and collection must, to some degree, depend on the customers' respect for the soundness of our policies.

Utilities have available the same facilities for obtaining credit information about present and prospective customers as do other retail establishments. In most communities local credit bureaus are well organized and managed. They play a vital part in the credit consciousness of all customers and are worthy of the support and cooperation of utilities. Fear is sometimes expressed that credit bureaus make too many demands for information from utilities. Their successful operation, however, depends on the completeness of their information and many utilities have found it possible to work out a plan with the bureau which would provide all necessary information without the burden of unfair expense or interruptions to routine operation. In some cities utilities provide the credit bureau *(Continued on page 299)*

Employee Manual Assists

● Following are some outstanding features found in some of the employee manuals:

Company Fact-Boxes—Scattered throughout the Sears manual are boxes, usually a color block, containing interesting facts about the company.

Acknowledgment Receipts—Some manuals, including "Partners in Revere," contain cards to be signed by the new employee and returned to the companies as evidence that he has received the manual and read it.

Improvement Card—In each General Food manual is a postcard to be used by the employee in suggesting ways to improve the manual.

Suggestion Award Record—On the last page and back inside cover of the Sylvania manual are places to record awards for prize-winning suggestions.

Glossary of Industry Terms—Crown Zellerbach Corp. lists and explains words and terms peculiar to the paper industry.

Individual Job Description—The Ritter Manual outlines the duties for each type of job in the company.

Employee Status Chart—The Eastman Kodak Co. presents in chart form the economic status of an employee in his relationship with the company.

Old Timers' Club—The James Mfg. Co. features the employees who have completed 20 years or more of service with the company.

Bowman City—The Bowman Dairy Co. illustrates the size of the company by grouping all its facilities into one composite, double-spread illustration of "Bowman City."

—*Harold E. Green in Printers' Ink.*

Residential Gas Section

J. H. WARDEN, Chairman | J. J. QUINN, Vice-Chairman | F. W. WILLIAMS, Secretary

Guideposts for Dealer Cooperation

Following a careful study of marketing problems and discussions with representatives of various retail distribution channels, the American Gas Association recently recommended to the gas utility industry certain sales policies for their consideration in promoting the sale of gas and gas appliances. These policies were outlined in the January issue of the MONTHLY. This article gives the reasoning behind these recommendations and elaborates upon their value in the postwar period.

Prepared by "Inter-Industry" Subcommittee, American Gas Association

THE successful sale of gas appliances is based on the same principles that govern the success or failure of selling in any line of business. Service to the public and the delivery to the ultimate purchaser of an item worth its cost are essential to success.

Gas appliances have met these tests over a great many years. They have rendered a highly satisfactory service, have been remarkably trouble-free and have always appealed to the customer as a good value for the money spent. Up to this point they do not differ materially from hundreds of other commodities which normally account for a huge volume of retail business. From here on there is a marked difference, for it must be remembered that gas service to the customer is no better than the equipment through which it is used. Thus, the installation of poor equipment, or equipment out of adjustment, adversely affects the gas company and the dealers who sell gas appliances. Only as present appliances render acceptable service and only as new and improved gas appliances are developed can the use of gas service by the public be expanded.

The result is an unusual marketing condition where we find the gas company primarily interested in rendering satisfactory service and the sale of gas, which cannot be accomplished without good appliances, and the retail dealer interested in the profit resulting from the sale of appliances, the success of his efforts being dependent on the quality and cost of gas service available to his customers. Thus, we find two major operators in a single market whose interests are closely interdependent, although each one approaches the market with a different objective. Because of these conditions it is inevitable that seeming misunderstandings should arise from time to time, and yet, when calmly analyzed in the light of the facts, the inevitable decision is that the best interests of both parties are served when their mutual interdependence is recognized.

Let us examine for a moment the reasons back of this interdependence which exists in the face of seeming rivalry. Natural gas existed in this country when the colonists first landed, but its possible uses were neither known or understood; hence it had no value and could not have been sold at any price. Gas was made commercially available in Baltimore in 1816 and at that time every home was a prospect for gas service, but its use was new and untried and no buying rush was experienced. Over the years there have been continuous, aggressive marketing efforts on the part of the gas industry and in recent years many dealers have joined these efforts. The effect has been a better acceptance by the public of gas service from year to year and an ever-broadening market for appliances. This result has been obtained only through constant effort and unfailing vigilance.

Appliance Development Factor

Gas appliances must be constantly improved to keep abreast of the public demand for greater comfort, convenience and efficiency in the home. There must not only be improvements to existing appliances but constant study and research looking to equipment that will permit the use of gas service in an increasing number of ways. It can be stated that the gas industry is now appropriating a greater sum for research and the development and promotion of gas appliances than has ever before been devoted to this work. As new appliances appear, they must be promoted by the gas utilities until customer acceptance can be built up. An illustration of a new type of application is year-round climate control for the home through gas air conditioning equipment which will be available shortly after the war.

Thus, there is promise of an ever-widening market for gas appliances in the years ahead which can yield profitable business for dealers, but this result will not be fully achieved unless the gas industry continues to "lead" the market by popularizing improved and new uses and appliances.

Careful studies have been made by the gas industry under the direction of its national postwar planning committee to learn, if possible, the most desirable and feasible ways of retaining and expanding its market, and naturally one of the important factors considered was encouragement of dealer distribution channels.

"Dealer cooperation" as often thought of in the past is qualified to take its place in the limbo of overworked words and phrases. Too often it has indicated the desire by one party to have the other party do all of the cooperating. Based on a careful study of its marketing problems and the discussion of these problems with representatives of various retail distribution channels, the American Gas Association, through action by its official board, has recommended to its member companies for their consideration a number of suggested sales policies which are believed to be of value in meeting many marketing problems that will arise in the postwar period.

An outline of these recommended sales policies and comments thereon are given below:

It is believed that gas utilities must undertake and continue full responsibility for leadership in gas appliance sales in their respective communities to the end that the inherent superiority of gas as a fuel shall be maintained: accordingly the following recommendations are made:

1. *That national, regional and state gas associations should cooperate with all similar national organizations in all allied fields.*

Since specific sales problems and the degree of interest in certain kinds of equipment varies with geographic locations and since retail trade groups are usually quite effectively represented through their association, it will undoubtedly prove most effective to place the discussion of problems, which will arise on a national and state basis, through various trade associations.

2. *That gas utilities should perform the task of promoting the sale of new and improved gas appliances to the point of assured customer acceptance.*

Since gas appliances are vital to the use of gas service and the use can only be expanded through the development of new appliances, it is necessary that this type of work be carried on constantly. The introduction of a new appliance and a new service is often a slow and costly process. There is no question but

what it is the obligation of the gas utility to carry appliances through this initial period.

3. *That as customer acceptance materializes, the activities of the gas utility should be continued in such a manner as to maintain continuing acceptance of gas service and to increase the flow of gas appliance sales through normal channels of distribution.*

The CP gas range is an outstanding example of an improvement upon an accepted gas appliance made necessary to meet the public demand for constant progress and development. This range provides greater profit for the dealer, more satisfaction for the customer and by replacing an old range which would not fully interpret the true value of gas service, removes the threat of competition in that home. When the CP range was first introduced, few, if any, dealers were interested in trying to sell them since no customer acceptance had been established. To a very large extent the gas utilities had to carry on the initial promotional work. Now, customer acceptance has been built up, and the dealer can participate in this very profitable market.

4. *That the gas utility should assume responsibility for gas appliance sales training of personnel (utility and dealer alike), utilizing the cooperation of gas appliance manufacturers.*

It is generally recognized that in the period after the war mass distribution of consumer goods will be necessary to support the mass production of which this country will be capable and upon which will rest our hopes for "full" employment. Authorities recognize the weakness of many prewar marketing methods, and adequate training of sales personnel will be a sensible and necessary approach to improved distribution efficiency.

5. *That the gas utility should assume responsibility for training dealers in installation and service techniques, utilizing the cooperation of gas appliance manufacturers.*

Trained installation and service personnel will be indispensable to the dealer to insure satisfactory operation of modern automatic appliances and to the utility to make sure the customer receives the great benefits that gas as a fuel can offer.

6. *That the gas utility should keep dealers informed as to the increased merchandising opportunities offered to them in the gas appliance field, e.g., additional lines, new products, new rates, etc.*

Market studies, to determine facts about appliance saturations, customer preferences and possible markets for new products will be of value in deciding lines to be handled and effective sales campaigns. The gas utility will best be able to furnish such information to retail distribution outlets.

7. *That the gas utility should inform all concerned with home construction and financing on all matters having to do with gas equipment and gas service.*

It is generally conceded that there will be a new home building boom of considerable proportions in the postwar period. How soon it starts and how rapidly its momentum increases are not as important as the kind of home to be built and that the extent of the need for gas service be fully understood.

8. *That the gas utility should provide or make available to dealers facilities for financing gas appliance installment sales as attractive and advantageous as the utility's own.*

Deferred payment financing of household appliances was sound in the past and will be resumed when consumer goods are again available. The exact terms are not as important as it is that dealers be in a position to offer gas appliances on competitive terms. A committee of the American Gas Association is actively studying this problem. One report has been issued and others will follow as further studies are completed.

9. *That the gas utility should initiate and promote appliance sales campaigns with cooperating gas appliance dealers.*

Prior to the war, enough examples existed of national and even state-wide coordinated appliance campaigns to indicate the value of this method of marketing.

10. *That home service and all other aids maintained by the gas utility should be made available to cooperating gas appliance dealer.*

The assistance rendered housewives by Home Service Departments during the war on problems of nutrition, food conservation, appliance care, etc., has elicited customer praise. The continuation of favorable customer contacts will be important in the highly competitive postwar era. Making such service available in cooperation with dealers will be a powerful sales tool, but no amount of customer contact will overcome the handicap of poorly designed or poor quality merchandise.

11. *That the gas utility should provide full information as to its policies and practices so as to establish a relationship of mutual understanding and confidence with the dealers.*

A complete understanding of the market possibilities and the mutual interest of manufacturers, dealers and gas utilities will only be fully arrived at as the result of close, constant contact by the parties at interest. Frank discussions of various problems as they arise will yield the best results and prevent misdirected effort and expense. It is believed that a majority of all gas companies will endorse these policies, and that adherence to them will do much to remove misunderstandings that may have existed in the past between dealers and gas utilities. Leaders of both groups now realize that their interests are closely related and that a cooperative effort will produce the best results for all concerned, including the buying public.

England's Dream Kitchen

● The city fathers of Harwich, England, are in a frightful stew about a kitchen that doesn't exist.

Almost every day they get shipments of pots, pans and assorted culinary gear ordered by "someone in London." They have hired a woman supervisor for the kitchen, on orders from a high government office but she has no kitchen to supervise. She's kept busy checking the equipment that arrives by train and truck.

Just the other day, the Harwich Board of Education got an important-looking document. It read: "Consignment of cookstoves on way. Watch for them."

The best explanation of the mystery seems to be this: A year ago, someone in the Britsh Government decided that a central kitchen and dining hall for Harwich school children was urgently needed.

But, with the labor shortage no buildings have gone up. The youngsters still eat at public restaurants. Dozens of letters have explained the situation—but the fittings for the "dream kitchen" continue to arrive.

Alderman Cann, chairman of the Harwich Board of Education, says he has tried to unravel this fantastic tangle of red tape and has been told that nothing can stop the deluge.—*American Weekly.*

NINE POINTS FOR SALESMEN

THE REAL SALESMAN IS

One who has self-confidence, but does not show it.

One who can be courteous in the face of discourtesy.

One who takes a firm interest in his firm's interests.

One who keeps his word, his temper and friends.

One who wins respect by being respectable and respectful.

One who turns up with a smile and still smiles if he is turned down.

One who understands people and can make himself understood by people.

One who has a steady eye, a steady nerve, a steady tongue and steady habits.

One who is silent when he has nothing to say, and also when the customer has something to say.

—*Washington National Review.*

Infra-Red Versus Convection Heating

BY CHARLES C. EELES*

Member, Committee on Heat Treating with Gas

PURCHASERS of modern ovens seek methods and equipment which will best cure industrial finishes with optimum speed while utilizing the most convenient handling method, producing the finest working conditions, occupying the least space, offering the greatest flexibility and resulting in minimum overall costs. Obviously the resolution of so many desirable features into a single unit involves considerable compromise. Designers must weigh several major variables about which there exists a certain diversity of opinion. The end use—drying, core baking, low temperature heat treatment or the curing of industrial finishes—is of primary importance.

Presently industrial finish curing furnishes the chief battleground for Infra-Red versus Convection Heating. In general, therefore, this discussion will be limited to that field but the principles developed can easily be translated into their effects on other processes using industrial ovens. Our objective is to determine the relative merit and future possibilities of so-called "convection" and "infra-red" equipment for curing industrial finishes. As used here, "convection" equipment refers to ovens which deliver heat to the work chamber solely by a stream of hot air from an externally mounted air heater, and "infra-red" equipment designates those which transfer fuel energy to heat in the work chamber entirely by means of high temperature radiant sources (either gas or electric) located therein.

* Industrial Engineer, The Ohio Fuel Gas Company, Toledo, Ohio.

Prepared for presentation at American Gas Association Conference on Industrial and Commercial Gas, Toledo, Ohio, March 29-30, 1945.

Heat Transfer Methods

Heat transfer is accomplished in three ways —conduction, radiation and convection. There is seldom a heat transfer problem which does not embody all three. However, one is generally dominant, or at least seems to be, and we then characterize the entire process by this predominating method.

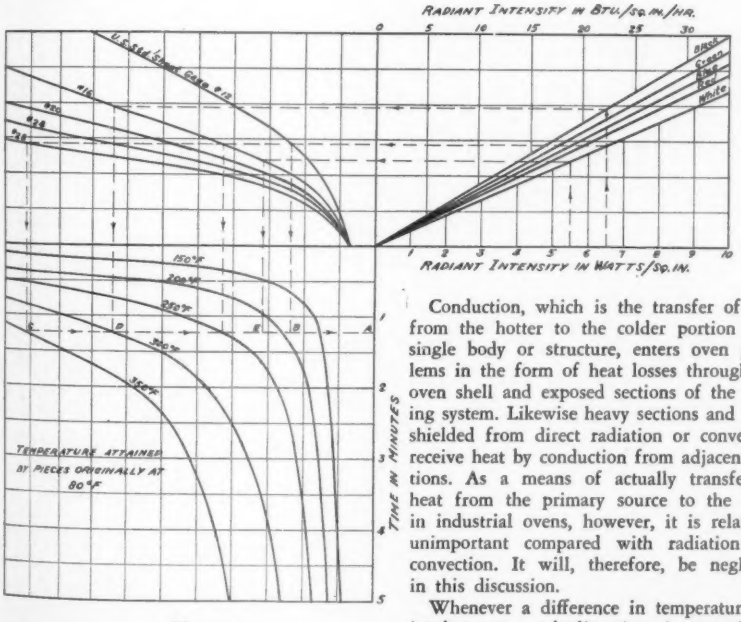


Figure 1

Conduction, which is the transfer of heat from the hotter to the colder portion of a single body or structure, enters oven problems in the form of heat losses through the oven shell and exposed sections of the heating system. Likewise heavy sections and those shielded from direct radiation or convection receive heat by conduction from adjacent sections. As a means of actually transferring heat from the primary source to the work in industrial ovens, however, it is relatively unimportant compared with radiation and convection. It will, therefore, be neglected in this discussion.

Whenever a difference in temperature exists between two bodies, there is an exchange of radiant energy. This type of heat transfer is accomplished by means of rays from that portion of the electromagnetic spectrum lying adjacent to light and commonly known as the infra-red band. Although invisible, they follow the laws of light such as straight line radiation in all directions from the source, high absorption by dark rough-surfaced bodies and reflection from light-colored highly polished surfaces. Heat transfer by this method increases rapidly with difference in temperature between the source and receiving body, being always proportional to the difference in the fourth powers of their absolute temperatures and to the radiant intensity impressed upon the receiving area.

Since radiation is in all directions from the source, the greater the distance between the source and the receiving surface, the fewer rays actually impinge on this surface. Thus radiant intensity varies inversely as the square of the distance from the source. Although proper reflectors will somewhat modify this law, normally the intensity at 2 feet will be ¼ and at 3 feet 1/9 of what it is at 1 foot. Figure 2 shows how the radiant intensity concentrated on an object at 220° F. will vary with the temperature of a radiant source (such as hot oven walls) which completely surrounds it. Figure 3 gives similar information for electrical sources.

Heat exchange by convection is proportional to the temperature difference between the hot air and the receiving surface; and to the rate at which this hot air is delivered measured in weight per unit of time. Figure 4 indicates the volume of dry 60° F. air which must be circulated to deliver certain amounts of heat with a specified difference between inlet and outlet temperatures.

Finish curing is directly dependent upon heating the work piece and there is no reason to suppose that a unit of heat works any more or less rapidly when supplied by one method or another. Rate of heating is controlled solely by the quantity of heat furnished to and absorbed by the work in a given time.

Finish Types and Characteristics

Industrial finishes for metals arrange themselves in three principal groups: Lacquers, Synthetics and Oleoresins. Combinations of two or more types may likewise be encountered.

Lacquers cure by evaporation of thinner. Since the temperature allowable without dam-

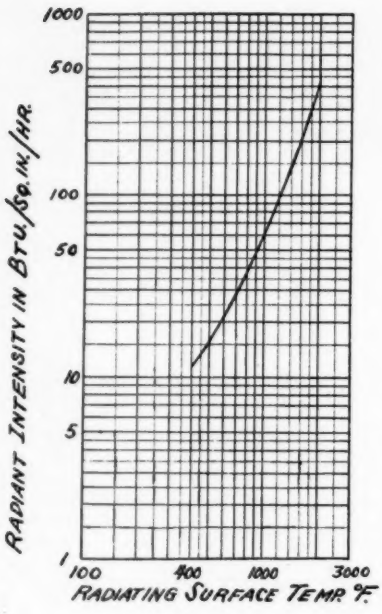


Figure 2

age to these finishes is low and their curing time pretty well fixed, they do not lend themselves well to much shortening of curing cycles.

Oleoresins—which group includes those commonly known as "japans" and "varnishes"—cure primarily through oxidation, but they likewise require polymerization and evaporation of thinner. Some improvement has resulted in their curing cycles through faster heating of the material, but the basic oxidizing process requires a comparatively long time and substantial reductions in curing cycles are, therefore, difficult to attain.

Synthetics cure basically through polymerization and to a certain extent by evaporization of thinner. Curing time is a function of the work piece temperature so they are the ones best adapted to short-cycle curing. One paint of this type requires 60 minutes to dry at 180° F. yet only 1 minute at 230° F.

Each finish has an optimum baking range below which results are too slow and above which damage occurs. A definite time is required to obtain a proper cure at every temperature within these limits. Obviously the specific make-up of a finish establishes the manner of curing and the time-temperature cycle by which such cure can be effected. Assuming sufficient fresh air is available to carry off the thinner vapors and provide enough oxygen to complete any chemical reaction requiring it, the curing time decreases with increase in temperature and is irrespective of whether the heat is applied by radiation, convection or conduction. Finishes in general are not unfavorably affected by products of gas combustion and hence lend themselves well to processing in direct gas-fired convection ovens. Infra-red is all right for thermosetting resins but not for the nitro cellulose base automotive finishes. White finishes are likewise difficult to cure perfectly with infra-red.

Figure 5 shows the manufacturer's actual time-temperature curing curve for an important industrial finish. The solid portion indicates the recommended range of practical baking schedules. The dotted portion is less practical for production because of the close control required. For most finishes this same manufacturer recommends an allowance of 30 minutes in the effective baking range and a total of 40 minutes in the oven—the additional 10 minutes to allow preheating the work piece and heat losses at the discharge end of the oven. He feels this is the minimum schedule which will allow good color uniformity between the various metal thicknesses usually employed in the fabrication of an article.

Infra-Red Characteristics

Industrial drying and finish curing using the "infra-red principle" underwent the usual period of glowing promises and extravagant claims before its true possibilities and limitations were thoroughly explored. Being subject to laws similar to those of light, the color, smoothness, shape and mass of the object to be heated strongly influence heating cycles. Even highly polished surfaces under the paint reflect the rays sufficiently to retard completion of the cure.

The temperature of infra-red sources is always far above that required to effect a proper cure. Overheating can occur rapidly if exposure time is too long. Conditions must, therefore, be so adjusted that regardless of section, color or difference in radiant intensity, the required curing times of all surfaces handled in a single unit are equalized.

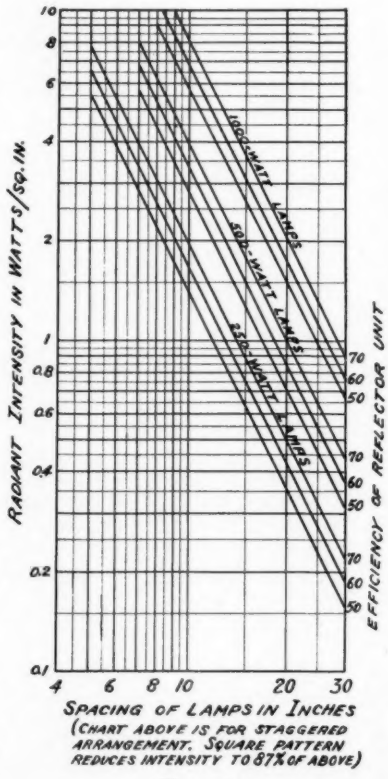


Figure 3

Figure 1, which was originally issued by a prominent manufacturer of infra-red lamps and has been reconstructed here for use with other fuels, clearly demonstrates the above points. With a concentration of 6.5 watts per square inch, a 16 gage sheet with a white finish will reach 250° F. in 1.2 minutes (as shown by Point A). Under an equal intensity a 12 gage sheet will reach 185° F. (Point B) and a 28 gage sheet 345° F. (Point C) in the same time. Since most products involve a variance in section or if, as is usually the case, it proves desirable to bake several thicknesses at once in the same unit, the lighter sections will reach a much higher temperature and their finish can be ruined due to overheating. Tests show that infra-red definitely does not bake from the inside out and its results are, therefore, not independent of heavy or light sections. A unit set and timed to properly bake a certain finish on 16 gage metal can badly overbake the same finish on 28 gage and underbake it on 12 gage.

The same chart shows that with 16 gage stock and 6.5 watts per square inch, a piece having a white finish will reach 250° F. in 1.2 minutes (Point A) while in this same time a temperature of 300° F. (Point D) would be reached by an identical piece having a black finish. Thus if the oven were set and timed for white, a black finished piece would be seriously overheated.

Heat Intensity

Heat intensity constitutes the other major variable. Figure 3 shows the radiant intensity impressed by various lamp sizes when mounted on certain centers in reflectors having the normal range of efficiencies for new units. With age, however, both lamps and reflectors become filmed with baked on paint vapors or other foreign substances. These effects reduce the efficiency of the lamp bank and consequently the intensity of radiation concentrated on the surfaces being finished. If the lamps cannot "see" all surfaces uniformly or if certain sections are in "shadow," still further variation exists in the impressed intensity of radiation. A third look at Figure 1 shows that to heat a white-finished 16 gage piece to 250° F. requires 1.2 minutes if the intensity is 6.5 watts per square inch (Point A). A drop to 5.5 watts, however, decreases the attained temperature to 220° F. (Point E). Therefore, to maintain proper baking a decrease in conveyor speed would be required with consequent loss of production.

Where properly adapted, infra-red sources transfer heat at extremely high rates and advantage can often be taken of this fact where work and proper oven design permit. However, the difficulty of exercising complete control is obvious and explains why ovens transferring the major portion of their heat

by infra-red are definitely limited in their application.

There are three general methods of minimizing those difficulties. A battery of ovens may be used, each one designed solely for baking of one part or parts closely related in color, size, shape, and section. Paints may be so formulated that slow baking compositions with high curing temperatures are applied to sections which heat rapidly and fast curing low temperature finishes used on those which heat more sluggishly. This reformulation usually includes the addition of special pigments which are highly opaque to infra-red rays thus reducing reflection and increasing absorption. The complications and expense of either method are obvious. The better way is the application of some leveling influence such as convection heating. To decrease somewhat the troubles which plague operators of infra-red units, one oven manufacturer has designed a system for circulating air heated to about 50° F. above curing temperature which can be added to infra-red ovens. By this means curing times may be cut in half and many other undesirable features accruing from infra-red heating minimized.

Convection Characteristics

Modern convection ovens use externally mounted air heaters where the fuel is burned. Fans circulate oven atmosphere plus the proper amount of fresh air through the heater. This heated air is then delivered to the oven by duct work designed to distribute it evenly. While in contact with work and walls, the air temperature is reduced. The cooled air then returns to the heater for reheating after which the cycle is repeated.

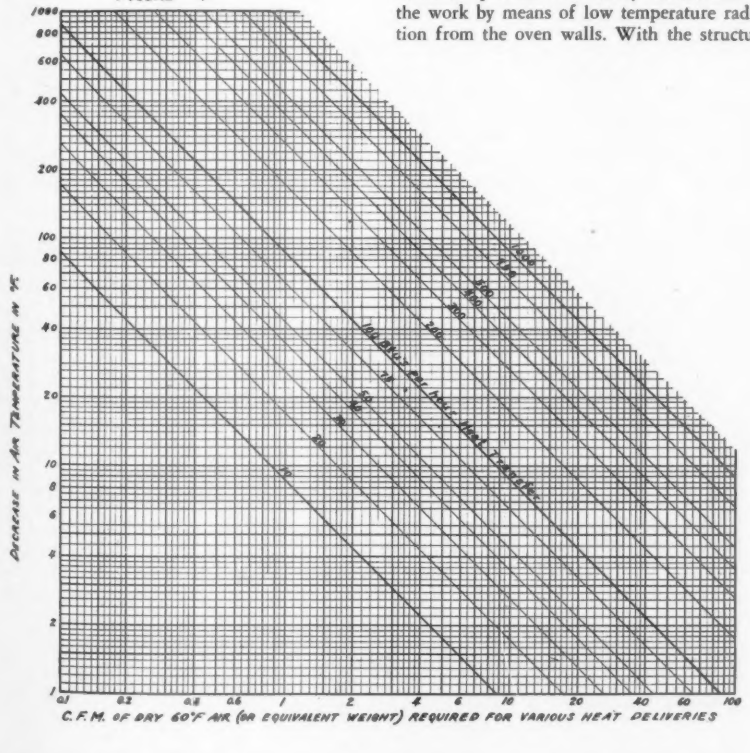
With this system no portion of the work, regardless of section, can ever attain a temperature higher than that of the inlet heated air stream. Close control may be exercised over uniformity merely by limiting the maximum temperature of the heated air. Heat delivery and, therefore, heating rates are increased by increasing the differential between heated air and work temperatures and/or by increasing the weight of heated air circulated per unit of time. High velocities sweep away the layer of stagnant air clinging to work surfaces decreasing film coefficients and speeding heat transfer. Tests have shown curing times with convection heating very inversely as the 1.8 power of the ratio of oven temperatures in excess of 150° F. Thus:

$$\text{Time II} = \text{Time I} \frac{(\text{Temp. I}-150)^{1.8}}{(\text{Temp. II}-150)}$$

Figure 4 demonstrates how heat delivery varies with temperature drop and circulation of dry 60° F. air. Design practice for convection ovens calculates all heat deliveries, volumes, velocities and static pressures at 60° F. Suitable corrections are then made for operating temperatures to allow proper selection of fan size and horse power. Complicated calculations involving the variance in air weight per cubic foot with temperature change are thus avoided.

The vitally important fact not generally recognized about convection ovens is that, although the heat is supplied to the work chamber from a stream of heated air, a considerable portion is actually transferred to the work by means of low temperature radiation from the oven walls. With the structure

FIGURE 4



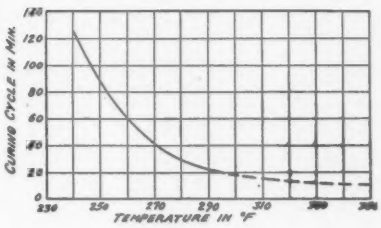


Figure 5

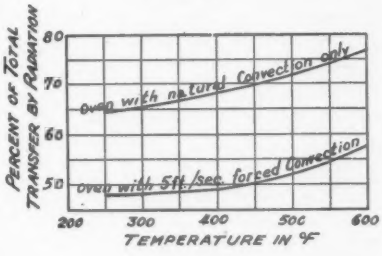


Figure 6

heavily insulated, as is now common practice, the walls reach a temperature very close to that of the inlet air. Since this is above curing temperature, there is a considerable radiant heat transfer from walls to work. As oven temperatures are increased greater portions of the total heat transfer take place in this way. The higher the oven temperature, the lower are the temperature variations in the heated space due to "shadow effect." Radiant energy developed in this manner from a convective source is far more uniform in its distribution over the work surfaces than an equal amount obtained from primary infra-red sources.

Figure 6 was plotted from reported results of an investigation wherein a metal sheet was so suspended in an oven that it was in no way shielded from full wall radiation and in this manner heated from 60 to 220° F. while oven temperatures were held at various points from 250 to 600°F. It is obvious that even under moderately forced convection, nearly 50% of the heat actually reaches the work by radiation.

Another interesting phase of this same investigation was to determine the radiant intensity in B.t.u.'s per square inch produced on totally enclosed work at various oven wall temperatures. These results are shown by Figure 2. Normal design intensities for electric infra-red units are 3 to 6 watts per square inch (10.2 to 20.4 B.t.u.'s per square inch per hour). Figure 2 demonstrates that inlet air and wall temperatures only moderately above those presently common in convection oven practice will create radiation intensities on work surfaces in excess of the best electric infra-red installations. This is because the surface area of primary high temperature infra-red sources is relatively small compared to the entire internal wall area of an oven the same size.

These facts give convection heating tremendous advantages. Radiant intensities as high or higher than available in the best

infra-red units can be obtained with less danger of serious overheating. In fact, delicate finishes which discolor when cured rapidly under infra-red can be baked perfectly at identical rates using modern high-speed convection equipment. The flow of hot air around and through the load, much of which is normally shielded from the radiant effect of the oven walls, allows the 40 to 60% of heat, actually transferred by convection, to serve as the equalizing medium which produces the overall heating uniformity characteristic of convection ovens. It likewise allows the use of loadings far more dense than possible in infra-red equipment with corresponding increases in output per square foot of floor space occupied.

Present Equipment

Units now installed range from antiquated uninsulated sheet metal and brick structures heated by gas pipe burners lying along the floor or electric resistor elements hung on the side walls to infra-red units and modern convection ovens. Occasionally we encounter units heated by liquid or solid fuels burned in fire boxes below floor level. Some units are batch-type, many are conveyorized. Thousands of different pieces are processed. Standards of production and curing cycles vary radically. Care must, therefore, be exercised in pointing to the improvements obtained in finish, curing speed or fuel economy through the installation of modern ovens. This is equally true of many tests run with the intention of proving the relative merits of one or the other of the heating methods under discussion. Thus, when it is claimed that this or that type of unit has made extravagant reductions in curing cycles, it is well to examine carefully the type of equipment formerly used, the kind of finish, the actual parts involved, the relative heat inputs and the heating method itself. Thorough analysis of a specific case frequently shows the spectacular results, attributed solely to type of heating, actually accrue largely from totally different elements of the design. High speed convection ovens are now available which will cure in 3 to 15 minutes finishes which require 30 to 60 minutes in the best-designed convection units of only a few years ago. An extremely misleading impression of the relative heating speeds presently possible with convection and infra-red equipment can, therefore, be created by comparing new infra-red installations with convection ovens more than a year or two old.

Early infra-red applications were merely banks of lamps mounted in suitable reflectors held by an open frame work on either side of a conveyor which carried the work. The fume condition thus created was uncomfortable for the workers and likewise constituted a serious fire hazard. Equipping the room with suitable exhaust fans pulled away the fumes but disrupted the cures because cold air from the floor was sucked up past the work cooling off its lower portions. This air became hotter as it progressed from bottom to top and a considerable temperature difference existed in the work piece preventing an even cure.

Next came partial enclosure of the lamps plus the use of an exhauster on the baking unit itself. Room air flowed up past the lamp sockets where it was slightly preheated, then down over the work and finally out through a bottom duct. At first this air was allowed to spill in over the topmost row of lamps but later a portion of it was brought in around each lamp. Considerable improvement in uniformity resulted with the addition of this crude convection system to the basic infra-red unit.

The final step has been the completely enclosed tunnel with lamps surrounding the work piece. Thermally this type is more efficient (approximately 65% as compared to between 40 and 60% for open units), but the bottom lamps are particularly subject to a coating of paint drippings and the upper lamps to a baked-on layer of vaporized paint. This clouding or gumming of the bulbs reduces the effective radiant intensity with the harmful results previously cited. In addition, excessive heat is retained in the bulb resulting in greatly decreased life. The thermal shock created by paint dripping on the bulbs may crack them, exposing hot filaments directly to combustible thinner vapors. Guards may be installed to prevent this, but they likewise serve to materially reduce overall efficiency.

Worries Are Legion

Small voltage changes also affect radiation intensities substantially. Lamp life expectancy averages about one year, but their output decreases radically over this period of service. Radiation intensity on work surfaces is constantly changing from all the above causes and the worries of he who chooses to bake with infra-red are legion.

Great simplification results from convection systems having adequate heating speeds. Conventional convection ovens so far developed, however, have aimed principally at uniformity of finish, rather than extreme baking speeds. With relatively few exceptions, they have distributed moderate volumes of air only slightly hotter than the maximum curing temperature. They have been equipped with full and fool-proof safeguard systems and temperature control has been from oven temperature. Fuel economy in general has been good. In some instances units have been equipped with complex heat control and zoned air distribution systems. Such an arrangement allows work leaving the oven to preheat the make-up air. At the same time hot air being exhausted through the entrance zone flushes out most of the solvent vapors and also preheats the cold work. In addition to improving overall fuel economy, this system maintains minimum solvent vapor concentrations in the main baking zone. Final oxidation or polymerization can then take place more rapidly and thoroughly with consequent improvement in luster, gloss and hardness.

One major oven company has developed a convection system which may be applied to existing infra-red ovens. The "leveling influence" of convection heating mentioned under our earlier discussion of "Infra-Red Characteristics," has thus been applied successfully. Other oven manufacturers employing infra-red sources for heating their ovens have found the use of an auxiliary convection system absolutely necessary to proper functioning of the equipment. Obviously, therefore, properly designed infra-red ovens must, and do, transfer large portions of their heat by means of convection.

Future Probabilities

Paint manufacturers indicate that postwar finishes will be far superior to any previously available. Motor vehicles, household appliances and the like will be designed for a longer service life than ever before. An integral part of such improvement is the development of better finish curing equipment. The stress will be on quality of product rather than extreme speed of cure. Too rapid heating results in blowholes and pitty finishes especially if the thinners are heavier oils rather than highly volatile solvents. These circumstances, in most instances, favor convection rather than the infra-red sources as the basic heat transfer medium. For this reason many leading industries are already laying out their postwar production lines based on convection ovens.

Regardless of whether heat transfer is by means of convection or infra-red, a flat test panel of uniform thickness and color may be processed perfectly in an amazingly short time. Arranging the same gage of metal in a manufactured article, such as a cabinet, suitably reinforced with ribs or structural members, greatly retards the speed with which a perfect cure can be obtained. Processing time must be predicated on the heaviest section. Lowering the curing temperature apparently lengthens the period of time a piece may be held at that temperature without damage to its finish. To establish the correct treatment for any part, temperatures should be decreased and cycles lengthened until the heaviest section cures properly without overbaking the lighter sections. Heavy sections increase required heating times much more with

Motor Inns

● There will not be and should not be any marked new construction of large city hotels after the war, according to The Ahrens Diary. There is likely to be some building of small-town hotels, chiefly in commercial areas not adequately served at the present time. There most definitely will be new construction of motor inns located on automobile highways. In certain industrial areas, which will automatically contract after the war, some restaurants will unquestionably close. The development of fine roadside eating establishments will pick up where it left off before the war.

In developing new types of equipment or in reestablishing your markets, cock your eye at development of motor inns and large modern roadside restaurants.

infra-red than with convection. The greater the variance in thickness, the less adaptable are infra-red units because they overheat thin sections before the heavier ones can be brought to temperature. Universal adaptation of convection heating is thus favored.

Although future stress is expected to be on quality rather than speed of bake, we must still be prepared to design ovens which will cure at optimum speed compatible with proper uniformity of finish. Time at temperature actually cures the finish and every temperature in its allowable curing range requires a specified time which decreases as the temperature is raised (see Figure 5). In the interest of maximum speed, therefore, it is desirable to use the highest curing temperature possible. The decrease in time thus effected must, however, more than offset the longer preheat required to raise the work to this higher temperature.

Rapid Heating Aim

Assuming the best paint formula and optimum baking temperature have been attained, the one remaining means of shortening the cycle is heating the work more rapidly. Where work can be so uniformly disposed to infra-red sources that equal intensity is received by all surfaces at close range without "shadow effect," then satisfactory results may be obtained through this method of heating. Such instances are extremely rare, however, and usually limited to such objects as flat sheets, tubes which may be rolled under the infra-red sources and small pieces which are completely and uniformly enveloped in infra-red energy while passing through a tunnel type unit. In those instances where the above conditions can be met and where finishes are such that they cannot be harmed by high radiant intensities, this form of heating will give satisfactory results provided enough circulation is added to insure uniformity, prevent local overheating, ventilate thinner vapors and deliver sufficient oxygen to those finishes requiring it in their cure. Such ovens, utilizing either gas or electric heat, will unquestionably find acceptance where their design allows the concentration of greater heat intensities on work surfaces than obtainable from wall radiation plus convection transfer in modern convection ovens. This, however, will be difficult to accomplish on most products.

Most future installations will be called upon to handle not only a single job but to cure perfectly a wide variety of finishes on a multitude of different parts having various colors, sizes, shapes and thicknesses of section. Oven builders, even those who include infra-red equipment among their products, feel that the convection oven is best adapted to most, if not all, industrial finish curing problems. The ability of this type to produce optimum uniformity is generally conceded. It has greater flexibility and can be economically equipped with full and fool-proof safeguard control. It is a simple matter to provide the 150 cfm per gallon of thinner per hour ventilation from continuous ovens and 350 cfm per gallon of thinner per charge from batch ovens required to safely exhaust combustible

AMERICAN GAS ASSOCIATION

INDUSTRIAL AND COMMERCIAL GAS

ADVERTISING FOR JUNE

The National Advertising Committee of the Industrial and Commercial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full page advertisements will appear in the trade and business magazines listed below during the month of June. These advertisements are prepared in cooperation with the Committee on National Advertising as part of the industry's national advertising campaign.

GENERAL MANUFACTURING

World's Largest Producer of Penicillin uses *GAS* for important operation. BUSINESS WEEK (June 30—⅔ page)

For a head start on the field . . . Plan on *GAS* when Re-converting. MODERN INDUSTRY (½ page)

Automatic precision control influenced Ault & Wiborg engineers to choose *GAS*. FACTORY MANAGEMENT & MAINTENANCE

Fabricator Finds Production Doubled, Costs Down, Rejects Eliminated with new *GAS* furnace. INDUSTRIAL HEATING

METALS INDUSTRY

Back of the Nation's production miracle . . . *GAS* Research.
FOUNDRY
THE IRON AGE (June 7)
METALS AND ALLOYS

Fabricator Finds Production Doubled, Costs Down, Rejects Eliminated with new *GAS* furnace. METAL PROGRESS
STEEL (June 25)

TECHNICAL COLLEGE PUBLICATIONS

GAS Fired Furnaces help produce the new Tubular Railway Axles. ENGINEERING COLLEGE MAGAZINES (6)

CERAMIC INDUSTRY

When Vitreous Enameling Furnace was converted to *GAS* . . . production increased 15%, control of temperature was assured, fuel costs were cut 50%, flexibility and other benefits accrued. CERAMIC INDUSTRY

GLASS INDUSTRY

National Ceramic Co., Trenton, N. J. increases production 30% and on new products, saves 20% since switching to *GAS*. GLASS INDUSTRY

CHEMICAL FIELD

Drying Ceramic Coated Welding Rods In *GAS* Furnace triples production—cuts cost—reduces rejects. CHEMICAL AND ENGINEERING NEWS (June 10)

New *GAS* Drying Oven helps reduce costs—speed production—improve working conditions. CHEMICAL & METALLURGICAL ENGINEERING

HOTEL AND RESTAURANT FIELD

Flexibility of *GAS* Equipment Praised by Englewood, N. J. Restaurant. AMERICAN RESTAURANT

St. Moritz Hotel chooses *GAS* to bake its famous pastries.
HOTEL MANAGEMENT
RESTAURANT MANAGEMENT

Pittsburgh's Famous Presbyterian Hospital Proud of Its *GAS* Kitchens. INSTITUTIONS

SCHOOL FIELD

Sparkling *GAS* Equipment Cooks for Mt. Mercy's Staff and Students. NATION'S SCHOOLS

HOSPITAL FIELD

Director of Overlook Hospital (Summit, N. J.) Pays Tribute to *GAS* Equipment. MODERN HOSPITAL

FOOD PROCESSING

World Famous Biscuit House Chooses *GAS* for trouble-free operation and dependability. FOOD INDUSTRIES

BAKING FIELD

Progressive Bakery Increases Production 200%—Cuts Time 57% with new *GAS* equipment. BAKERS' HELPER (June 16)
BAKERS WEEKLY (June 25)

vapors. Adequate fresh filtered air can be introduced at the time and place best suited to cure oxidizing finishes.

Certain of the earlier convection ovens, however, compared unfavorably on a speed basis with infra-red units when the latter were adapted to special purpose work. The erroneous belief has, thus spread that convection ovens are necessarily much slower than infra-red units. This has been definitely proved untrue. In extensive tests conducted by the Committee on Industrial Gas Research of the American Gas Association, cures were effected in much shorter times with convection than with infra-red on pieces and finishes well adapted to radiant heating.

Past convection oven design has held delivery air to only slightly above the desired curing temperature and circulation used has been moderate. By heating the inlet air several hundred degrees above the curing temperature and at the same time employing increased volumes of circulation, those finishes which will withstand thermal shock can be processed with speeds equal to and in many instances far better than those obtainable in infra-red ovens. At the same time that uniformity, only attainable with convection heating, may be retained. Such a high temperature head takes advantage of both greater convection heat deliveries and the tremendous increase in wall radiation intensity demonstrated by Figure 2.

Continuous high-head convection ovens will use control of inlet air temperature and volume plus a timer on the conveyor to regulate the process. A great variety of products can be properly cured at highest allowable rates in the same oven merely by resetting the air delivery temperature and adjusting the conveyor speed as pieces are changed. Or, by adjusting the entering air temperature and conveyor speed to those required by the most sluggish part, such ovens may be used as general purpose units to handle various sizes, shapes, sections and finishes.

High-head convection heating will likewise be applied to batch ovens with a program controller acting on the temperature of either the oven or the inlet air. The high thermal head will be maintained until the work approaches proper curing temperature and then cut back sharply by the controller to prevent over shooting. Curing will then be completed at the proper temperature. Optimum curing speeds can thus be obtained in well designed batch ovens.

Other interesting possibilities in faster cures are under investigation. One is the development of finishes which can be subjected to a high temperature for a very short time thereby acquiring a "heat set" of sufficient hardness to allow further processing of the part while the cure (either oxidation or polymerization) is completed over the next 24 or 48 hours at room temperature. Final assembly and testing may thus be taking place during completion of this delayed cure. High-head convection heating is ideally suited for this process.

A second development concerns the theory that improved and faster curing may be accomplished if the work pieces pass through a preheating oven and come to the spray booth at curing temperature. Spraying of these hot pieces followed by a short curing period in an oven just beyond the spray booth may result in an overall improvement in finishing results. Here again convection heating is well suited.

Convection Ovens Adaptible

A poll of the oven industry indicates that full convection ovens are best adapted to all-around work and that if properly designed, curing speeds can result which are equal to or better than those obtainable by any other method. Nevertheless, some special purpose installations will utilize infra-red sources. These include processes where circulating atmosphere would damage the product by distorting, compressing or otherwise disturbing the material being heated. Infra-red is likewise extremely effective for heating materials that can be penetrated by radiation but which by nature are insulators and hence resist heating by conduction inward from the surface. It is well suited to portable units for intermittent use on relatively flat surfaces where close control of temperature is not too essential. Hard rubber, some glasses, and many synthetic resins are transparent to infra-red and its use for heating them is, therefore impractical. White finishes are difficult to process perfectly in infra-red equipment.

The enormous possibilities of properly designed convection ovens have not, to date, been used to full advantage in industry. Their close temperature control is essential to uniform color and color matching. It often enables manufacturers to convert low priced paints into finishes as durable as the the more expensive grades. When desirable, heating speeds and curing times can be obtained which are equal to or better than any competitive method. Under most circumstances the maximum production per cubic foot of oven volume is reached with convection equipment.

In addition to the new types of convection ovens discussed here, designers will in the future incorporate many refinements already worked out but not so far generally applied. By bringing the make-up air in over the exit parts they will be cooled and the air economically preheated. This preheated air can then be used as part of that delivered from the heaters to the principal baking zone. The required volume of exhaust air will move out of the baking zone, passing over the incoming work to preheat it and flush out the thinner vapors. Such a zone system provides maximum thermal efficiency. High volume air curtains will be used at the ends of continuous ovens with an improvement both in temperature and atmosphere conditions for workmen in the surrounding areas. Improved panel construction with optimum insulation thickness and the least possible through-metal will minimize thermal losses. Above all gas will be the preferred fuel.

Conclusion

The attempt here has been to review a bit of the theory and practice of industrial finish curing; to stress the fact that future convection oven design will be able to attain equal or greater speeds than infra-red curing without its handicaps; and to provide industrial gas engineers with information which will serve as a yardstick in measuring the qualifications of the various oven proposals their customers may entertain for modern finish curing equipment.

In closing, the author wishes to express his appreciation to the 35 oven builders, burner manufacturers, paint producers, plant engineers and industrial gas engineers who so graciously supplied much of the information contained herein.

Crime

● A woman contributor in "The Gas Salesman," March, 1943, expresses dismay that gas is featured in some films for the purpose of either suicide or murder. Another writer in this Journal asserts that it is not really the fault of the gas industry if its main product is misused to provide a smooth exit from life. He goes on to say that no reasonable person would argue that the number of suicides would be reduced if the gas industry did not exist. Reference is made to the notorious Mr. Smith, who contracted the unfortunate habit of immersing his brides in the bath. Mr. Smith departed this life at the end of a rope, yet who would argue that the blame should be placed on the water supply? *Nat'l Gas Bulletin of Australia.*

Home Planners' Program Offered at Institutes

THOUSANDS of home seekers, planning to build when restrictions are lifted, will find help through the Home Planners' Institutes now being fostered by the National Retail Lumber Dealers Association, Washington, D. C.

More than 35,000 prospective home buyers in 138 cities have already attended these free lectures covering construction, decoration and equipment for the home.

Home Planners' Institutes are sponsored locally by combined groups of bankers, dealers, builders, and utilities interested in the home building field. Such groups form Home Planners' Institute Committees for the purpose of providing the public with accurate information on postwar home building through the medium of a course of specially prepared authentic lectures.

Hundreds of these committees have already obtained the manual containing over 32 lectures and other material prepared by the National Retail Lumber Dealers Association.

Over 350 Home Planners' Institutes will be functioning by September, according to H. R. Northup, Secretary, National Retail Lumber Dealers Association.

Technical Section

L. E. KNOWLTON, Chairman LESTER J. ECK, Vice-Chairman A. GORDON KING, Secretary

The How and When of Applied Safety

BY DR. RUPERT L. CORTRIGHT*

Associate Professor of Speech, Wayne University

IN the first 18 months after Pearl Harbor there were more casualties on our industrial home front than of our men on all our war fronts. Recently on a national hook-up an N. B. C. announcer stated—"There were 97,900 lives lost in industrial accidents in this country last year." This means 268 per day, 12 per hour, or 1 every 5 minutes. The announcer added: "The injuries alone this past year resulted in time lost equivalent to closing down for a full year war plants employing a force of one million men."

I don't need to tell you anything about personal experience with families facing the death of a breadwinner. Many of you have sometime probably had to carry such sad tidings. Death from an industrial accident is not just a statistic—it is something terribly real and so tragic in its consequences that there is not one of us but who would do all in his power to prevent rather than to face such a death.

Motive Important

We must appeal to men through their selfish interests. The armed forces have taught through this motive powerfully. Some of you may have had the privilege of seeing training films used in the Army or Navy. This teaching has been tremendously effective because the officers could say to the recruits: "If you forget this it may mean your life or a buddy's." This isn't something you do because you get fined if you don't. This isn't something you do only when the foreman's watching. This is something you do if you want to live. This is something you do if you don't want to spend your vacation in a hospital. This is something you do if you want to say hello to the youngsters tonight. Knowing the safety job is never enough. Our most important task is stimulating its doing.

Many of you have had some of the Training Within Industry courses: Job Instruction Training, Job Methods Training and Job Relations Training. These are all tried and proven basic patterns of operation. There are fundamentals in these to which we can anchor an intelligent safety program. Here we wish to devote our attention to: "An analysis of work operations from a safety angle and for the purpose of evolving preventive techniques."

There is a recent book, Basics of Supervision,† by H. W. Heinrich of The Travelers Insurance Company from which comes the following list of 16 basic factors of supervision:

"Group I—Attitude

"1. Willingness to lead and direct.

"2. Recognition of responsibility to management." The supervisor agrees to carry out the policies, accept the responsibilities, and act as a representative of management.

"3. Recognition of responsibility to employees." The supervisor must see that production orders are carried out, but at the same time he must see that the safety of employees is assured.

"4. Sense of fair play." The foreman is the balancing and harmonizing agency in industry—harmonizing workers and management's viewpoints, objectives, and interest.

"Group II—Ability

"5. Ability to plan and organize." A lively imagination and orderly mind are assets here. If any of us have had the advantage of the 10 hours on Job Methods, here are opportunities for application of that training as we plan and organize details within the overall plan of operation.

"6. Ability to train and instruct." This takes us back to Job Instruction Training and its four-step pattern.

"7. Ability to observe and analyze." This is the factor to which we will give major attention.

"8. Ability to persuade, convince and command." It requires technique to be completely understood and heeded without arousing resentment.

"Group III—Knowledge

"9. Knowledge of company policy." Since the foreman is a link in management, there is divided responsibility here: Management must make information explaining the policy available and the foreman must familiarize himself with all details concerning it.

"10. Knowledge of the job and of unsafe and improper conditions.

"11. Knowledge of worker performance and of unsafe and improper practices.

"12. Knowledge of control methods." These items—10, 11 and 12—we are to treat in detail later.

A foreman may be qualified as to Attitude, Ability, and Knowledge, but his job is not complete until he has translated these into Action.

"Group IV—Action

"13. Training and instructing.

"14. Giving orders.

"15. Checking worker performance.

"16. Prevention and correction."

Now suppose, for the moment, we discard all but factors 7, 10, 11 and 12. You ask: "Why emphasize just these?" Because they point the way to safe operation and only through them can evolve a reliable pattern for a foreman's safety thinking.

Look back at factor 7—"The ability to observe and analyze." To get in the right mood and the correct attitude for this look at Charts 1, 2 and 3 which were used by John Agar of the Michigan Bell Telephone Company in his talk before the State-Wide Safety Conference in 1943. The first pictures a ratio developed by H. W. Heinrich.‡

Contributed by

DISTRIBUTION COMMITTEE

T. H. KENDALL, *Chairman*

This diagram makes vivid the well known proportion, indicating that there are 300 accidents which do not result in injury to every one which results in a lost time or a disability assignment injury, and to every 29 which result in merely minor injuries.

Chart 2 shows this in a little different way. It raises the question of how many careless Act I's there are which never develop into Act II, where they are recognized as accidents even though no injury develops, let alone developing into Act III or injury accidents. How many incidents occurred? How many unsafe acts were performed? How many improper methods were used?

Chart 3 suggests that it might be 3,000, perhaps 5,000, possibly even 10,000. It is

*Given before the Public Utilities Division of the Detroit Industrial Safety Council February 28, 1945. Safety pattern supplied by Mr. Puddiford, Michigan Bell Telephone Company, and program developed by Public Utility Committee, A. V. Brashear, Michigan Consolidated Gas Company, Chairman.

†Published 1944 by Alfred M. Best Co., Inc.—New York City, N. Y.

‡Industrial Accident Prevention published 1941 by McGraw-Hill Book Co., Inc., 330 W. 42nd Street, New York City, N. Y.

our job as supervisors, as safety-minded supervisors, to *observe and analyze* every operation under our guidance for any weakness which may set the stage for an Act II or an Act III.

Where do we find these unsafe operations and improper methods? All around us. Let's study a few pictures (Figures 1 to 5)—all examples of Act I's—all instances in which preventive work needs to be done. These are not retakes of actual accidents. It isn't our purpose here to embarrass any operator by re-hashing or holding a post-mortem on one of his experiences.

Chart I

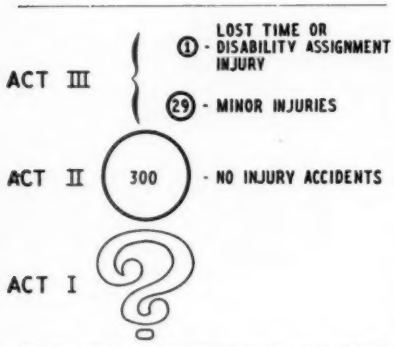


Chart II

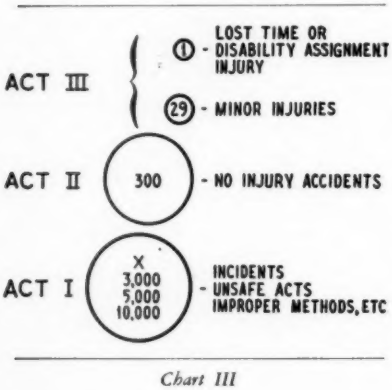


Chart III

Now turn back to the factors 10, 11 and 12 in the Knowledge group—the three things which you, as supervisors, must have in order to function as directors of operations. You must know the job (factor 10) as well as, and better than, most of your workmen. If you are a foreman on a large main job and the trench is being run through soil which has been disturbed by some previous operation, your knowledge of the job and your desire to provide safe working conditions for the men in the trench will dictate that you must have this trench either spudded down on both banks or properly shored or both.

Presumably you have a knowledge of worker performance and of unsafe and improper practices (factor 11) and this tells you where to look for items that need correction. If you are a supervisor on a pole crew you know that it is very easy for a worker to forget to make a pole test at the base of the pole before climbing it.

Presumably you understand control methods (factor 12) and as a supervisor with the safety of your men uppermost in your mind must be constantly on the alert for any flaw in control. It is a comparatively simple thing to drive a probe in the soil for test purposes and yet it is very easy for the hammer or mall to get out of the proper arc for a safe and effective sock on the top of the bar.

Set Up Safety Pattern

Now you have seen a group of Act I's and we have just reviewed the factors which we, as supervisors, must possess to properly handle these. As I told you at the outset, we want to offer a pattern for your use in making a safety survey and correction, and it is this which is patterned after the Training Within Industry plan. It is hoped that its simplicity and brevity will appeal to you. A series of cards will be used for this presentation. The first three of these, shown in Chart 4, carry the heading—"Survey."

The first of these directs attention to the Zone of Action with two subheadings. Often an action takes place over an extended area and it is this area that must be examined when you are considering practices which may result in accidents. On the other hand the action may take place at a very definite point of operation and it is here that your attention must be centered. A classic example of this is driving a spike with a hammer and your point of operation is the place where the hammer face hits the head of the spike. Anything such as the thumb that gets into the scene at this point of operation is bound to bring results, both painful and upsetting to the operation.

Let me present point two which is shown on our second survey card. This is entitled Line of Motion and it is the second thing to which we must direct our attention when we are observing and analyzing any situation. When a workman swings a pick, the Line of Motion is in an arc directly above his head. Here the foreman must so place his men that the tool moving through this line of motion will not strike anyone, will not strike anything which might fly and hit someone or which would not cause an accident if its line of motion should be changed by slipping from the operator's grasp.

The third survey point is Method of Control which divides itself into two heads—Mechanical or Human, or often a combination of both of these. When any motor vehicle is driven down the highway there is a complexity of control, much of it mechanical but all subordinated to human thought and action. The failure of any one of the mechanical controls may lead to an accident and yet there may be a control which the human element can exercise to off-set the mechanical failure. However, when the human control fails or displays a weakness we are into Act I which may lead with great rapidity into one of our Act II or Act III accidents.

The second half of our pattern, the "Correction of Hazards" part, is illustrated in Chart 5.

The first one of these offers the suggestion to *Remove* the hazard. Now there are many hazards that lend themselves to this treatment. For instance if I find an air hose that snakes itself across the sidewalk in the proximity of our work, I am going to ask the operator of the equipment to remove that hose from any path that a pedestrian would normally follow.

The second card carries the suggestion to *Guard* an operation. Now it is known that the eye can easily sustain an injury from the electric arc and as an excellent example of guarding I would cite the use of the folding shields by the Department of Street Railways work crews when doing any welding on the track system on our public highways.

The third correction which I would offer covers an endless field and embraces the *Training* of our personnel. Countless examples could be cited, but when they are all collected they would point in these directions: training of employees to use safe work methods, to avoid unsafe or improper work conditions, to sense anything which may lead to an Act II and move for its correction while in the Act I stage.

Now you have our basic pattern for appraising a situation for possible accidents and a suggested outline for taking corrective steps. Let's fasten these in our mind in sort of a broad band where we can constantly refer to them and at the same time carry an image of the Act I's that face us every day. By way of practice, look again at Figures 1 to 5 to see how our pattern works on these typical situations.

In the first scene (Figure 1) our Zone of Action defines itself as the highway travel area and the Line of Motion is that of vehicles travelling along the highway beside the parked car. Here we notice the operator getting out of the left side of the vehicle—a distinctly hazardous operation. The Method of Control in this case is recognized as entirely human. In referring to the correction of hazard part of our pattern, we immediately fasten our attention on the third card of Chart 5—Training—stopping here, for this is definitely a matter of training. Understand this: you as supervisors must necessarily be in complete sympathy with the need to conform to the practice of using only the right hand door of the motor vehicle except in completely protected zones.

Figure 1. Scene in traffic—driver dismounting on left

Figure 2. Open trench without barricades

Figure 3. Chisel—mushroom head

Figure 4. Trailer hitch—safety rest not lowered

Chart IV

Chart V

There is one other correction method that could be applied here and is on occasion used. Some motor vehicles that carry ladders, pipes and other long material find it expedient to mount this on a rack at the left side of the vehicle, extending past the cab and so blocking the door. This can be said to be a form of Guarding. On the whole this is sound practice, but one must recognize that in the case of an accident which would seal the right hand door, the occupants of the vehicle would have no means of exit.

Now we'll put the second scene (Figure 2) through the screen of our pattern. Here we see an open trench and our Zone of Action is the entire area in and around the trench. Our Line of Motion depends on the activity concerned, but the one I want to discuss is that of any individual across the top of the ground in proximity to the ditch. Here the movement is a human control factor entirely and the obvious correction method is to Guard the trench with barricades. In this instance the only way to Remove the hazard is to fill the trench, but we obviously cannot do that until the work operation is complete. Here Training would involve the public as well as the men working in and around the ditch and this is definitely impractical.

Figure 3 showing the chisel very definitely indicates a mushroom head and for purposes of analysis let us deal with this one single hazard. In this case the Zone of Action narrows down to a point of operation which is the head of the chisel. The Line of Motion is indefinite because the path of any flying piece cannot be determined ahead of time. Some of you will doubtless want to describe the arc of the hammer swing as a Line of Motion, and it is, except that it is an Act I which may lead to an entirely different type of hazard. In studying the Method of Control it is recognized that the mushroom head does not line itself up as being subject to either human or mechanical control since it is impossible to tell when a piece may fly off, which direction it will go, how far it will fly and how hard it will strike. Therefore it is necessary to pass over this survey point and go on to the correction of the hazard. The obvious answer in this case is to Remove the hazard by grinding off the head.

In our picture of the trailer hitch (Figure 4) there is one point of operation that stands out as a hazard and that is at the point between the tongue of the cart and the hitch on the rear of the motor vehicle. The Line of Motion is again one of those indefinite things with the trailer tongue apt to drop or lurch in any direction depending on the balance of the trailer and its position of rest and any one of these motions may bruise unwary fingers or crush a toe. We can see that the Method of Control in this case is entirely human. The difficulty apparent in Removing the hazard or Guarding this operation forces us to say that the answer lies almost entirely in Training.

In Figure 5 a power grinder is shown with the tool rest about one-half inch away from the working face of the wheel. Here the Zone of Action is a point of operation at the spot between the wheel surface and the tool rest. The Line of Motion is tangent to the face of the wheel at the rest, the hazard in this case being the danger of a tool or a finger being drawn into the space between the rest and the wheel. As this now stands the Method of Control would appear to be human and it is true that care in holding the tool will probably prevent difficulty, but the stage is all set for Acts I,

Figure 5. Power grinder with tool rest too far from wheel

II and III to follow in quick succession. A mechanical control eliminating the hazard is much more positive. Removing the hazard is accomplished by shifting the tool rest up to the face of the grinding wheel. It can also be said that the tool rest is a Guard but it is not performing its complete function when it is in the position shown.

Now you have seen our pattern for your use. Let me again emphasize that you carry this image with you—the picture of our survey and correction cards spread at the base of the view being analyzed. Take this with you and tomorrow when you get on the job, throw your work operation on the screen in the center of your mental stage and sift every Act I being played before your eyes through our screen of six cards as shown in Charts 4 and 5. And as you return to the job, may there be vividly before your eyes and ringing in your ears a realization of the importance of fulfilling your responsibility for safety. Let's remember that our dividends in preventing accidents are in the happy homes and the continued earning capacities as well as the maintained schedules of vital production.

Brooklyn Union to Spend $5,213,000 on Gas Plant Expansion

THE Brooklyn Union Gas Company has announced that it plans to spend at least $5,213,000 during the coming year on an expansion program which will increase the capacity of its gas manufacturing facilities by 20,000,000 cubic feet a day.

Surveys made by the Brooklyn utility have indicated that increased use of gas for heating homes and other purposes may, within five years after the war, add 40 to 50 million cubic feet to the company's sendout on peak days.

President Clifford E. Paige, in announcing the plans, said the expansion program will take care of anticipated needs during the first two or three postwar years. He indicated that further additions to plant capacity will be made as the need arises.

The present capacity of the company's two manufacturing plants is about 135 million cubic feet per day. This has been adequate to supply all normal demands, but steadily rising sendouts have wiped out most of the margin by which manufacturing capacity exceeded maximum demands, and additions to plant therefore became necessary to provide for anticipated further increases.

The immediate program calls for the installation of two additional gas generators at the company's Greenpoint Works, new purifying equipment at its Citizens Works, more than two miles of 42- and 48-inch high pressure transmission mains, three new compressors, and a vast amount of auxiliary equipment.

At the company's Greenpoint Works the generator house and the fuel handling system will be extended about 60 feet to make room for two 10′ x 9′ U. G. I. mechanical generator carburetted water gas sets, each having an estimated capacity of 10,000,000 cubic feet a day when using heavy oil and reforming. They will be equipped with automatic controls, including automatic chargers for refueling.

In the interest of economy the six existing generators in the Greenpoint works also will be adapted to use heavy oil for enrichment in place of the lighter oils used in the past.

The increase in plant capacity and changeover to heavy oil necessitated including in the plans the installation of a modern high pressure boiler capable of producing 60,000 pounds of steam per hour at 650 pounds per square inch pressure, a million-gallon tar storage tank, additional equipment for cooling and purifying the gas, and an 8-inch pipe line from the company's dock on Newtown Creek to carry heavy oil to the storage tanks.

About 11,000 feet of 48- and 42-inch mains will be laid to carry the gas from the generators to the Maspeth Avenue pumping station and thence about two-thirds of the distance to the Newtown Station, to a point where connection will be made with existing main. At one point the main will split into two 30-inch mains, which will carry the gas under Newtown Creek.

Three Clark angle diesel engine compressors are to be installed in Newtown Station. They will be capable of delivering 1,626,000 cubic feet an hour at 20 pounds pressure.

A new light oil scrubber, to remove gum-forming constituents from the gas, will be installed at the company's Citizens Works. Other additions there will include a salt water condenser with cast iron tubes and a new turbine drive centrifugal pump.

The Bartlett Hayard Division of Koppers Company and United Engineers & Constructors, Inc., have been engaged to perform all the work except for laying the plant and transmission mains. Plans were prepared under the general supervision of Harry L. Nickerson, the utility's chief engineer.

Reducing Variations in Bulk Density of Coal

VARIATIONS in the bulk density of coal used in byproduct coke ovens—a serious handicap to efficient oven operation and production of the uniform coke needed for blast furnaces—are reduced by the addition of small quantities of oil to the coal mixtures, according to a progress report released today by the Bureau of Mines on its coke production survey.

Oil lowers the excessively high bulk density or weight per cubic foot of dry coal and increases the bulk density of wet coal, tests on samples of the mixtures used at three byproduct coke plants disclosed. Even the bulk-density fluctuation in a single oven charge is decreased by application of oil, the authors state. However, they warn that care must be used in its application at plants using coal mixtures that tend to produce high expansion pressures, for increased bulk density may aggravate this condition.

Prepared by W. S. Landers, L. D. Schmidt, and William Seymour, Bureau engineers stationed at Pittsburgh, Pa., the report describes testing methods and a new procedure for determining bulk density. Known as the "dropped coal method," it yields results which agree closely with the average bulk density found in actual practice. Some methods for handling and applying oil at the coke plant also are presented.

A copy of the publication may be obtained by writing to the Bureau of Mines, Department of the Interior, Washington 25, D. C., for Report of Investigation 3807, "Control of Bulk Densities in Coke Ovens: Studies on Coal Used at Three Byproduct-Coke Plants."

Production of Coke

THE production of coke from coal-gas retorts in the United States in 1944 reached 878,632 net tons valued at $7,078,113, according to Mineral Market Report MMS No. 1280 of the Bureau of Mines, United States Department of the Interior. This was an increase of 2 per cent in output over 1943 and may be attributed largely to the continued heavy demand for manufactured gas-fuel by industrial and domestic consumers, and the gain of 5 per cent in value, to the rise in manufacturing costs.

Production of coke breeze or screenings totaled 103,909 tons, a decrease of 16 per cent from the preceding year. Of the total gas-house coke output in 1944, vertical retorts and miniature horizontal gas ovens supplied 55 per cent, whereas the remainder was produced in horizontal retorts.

Returns from producers revealed that 2,984 gas retorts were in existence at the end of the year, 2,421 of which were in active operation, approximately the same number as in 1943. The rate of production was 77 per cent of capacity compared with 73 per cent for the preceding year.

Determining Surface Moisture of Coal

A RAPID method for determining the surface moisture of coal—an important controlling factor in making coke in byproduct coke ovens—has been developed by Bureau of Mines research workers at the Pittsburgh, Pa., experiment station, according to a publication released by Dr. R. R. Sayers, Bureau Director.

By means of a relatively simple apparatus, a measured sample of the coal to be tested is placed in a solvent such as alcohol and the surface moisture is dissolved. The solvent then is filtered from the coal and its moisture content is determined by measuring the dilution of the solvent by its change in specific gravity.

L. D. Schmidt and William Seymour, Bureau engineers, prepared the report.

Laboratories

GEORGE E. WHITWELL, Chairman R. M. CONNER, Director W. H. VOGAN, Pacific Coast Supervisor

Approval Requirements for High Altitude

SPECIAL high altitude approval requirements for gas appliances designated for use at altitudes above 2,000 feet have been adopted by the Approval Requirements Committee, a sectional committee, of the American Standards Association. The new requirements became effective immediately following their adoption April 13 and are expected to be accepted by the American Standards Association in the near future as American Standard.

The American Gas Association Testing Laboratories are prepared to test ranges, space heaters, central heating appliances, and water heaters under the new requirements immediately, these being the classes of appliances affected by the action. All other types are expected to be covered later. High altitude requirements for hotel and restaurant equipment are in preparation at the present time.

Generally speaking the new requirements cover gas equipment operating on all gases including liquefied petroleum and butane-air. Specific tests are provided for combustion as well as for performance of main and pilot burners and draft hoods. High altitude is defined as any elevation between 2,000 and 5,200 feet.

Appliances approved for high altitude use will bear additional markings indicating such use together with their high altitude input rating for all burners except those for which minimum ratings are specified. Tests for high altitude approval will be conducted at low altitude on natural gas with main and pilot burners adjusted at normal test pressure at 26 per cent above the manufacturer's specified high altitude gas input rating. Where constructional changes are made for use at high altitude over that at low altitude, such additional tests as these changes may necessitate will be conducted.

This test procedure is equivalent to testing at 5,200 feet elevation above sea level at the rating specified. It was adopted after exhaustive experimentation with both this test method and one employing a special chamber at the National Bureau of Standards in which any desired altitude condition could be duplicated. The special chamber method was considered impractical because it would be more expensive and time-consuming and furthermore would be impractical and inconvenient for manufacturers to employ for development purposes. On the other hand the method adopted could easily be employed by manufacturers in their own testing operations.

The new requirements will benefit approximately 1,200,000 people in the Rocky Mountain area, the majority of cities in this area being located at elevations of from 3,000 to 8,000 feet. For altitudes above 5,000 feet the approved high altitude input rating should be reduced by 5 per cent for each 1,000 increase in elevation.

A. G. A. Report on Oven Heat Distribution

A COMPREHENSIVE research bulletin dealing with problems in range oven heat distribution has been completed by the American Gas Association Testing Laboratories for approval by the Committee on Domestic Gas Research. It forms the tenth of a series devoted to Domestic Gas Cooking Research.

Results of latest studies on a number of typical gas ranges are presented, including effects of a variety of experimental constructional changes and the influence they exert on oven heat distribution. Information now made available for the first time should prove of great practical assistance to manufacturers and designers in attaining improved oven baking performance.

The new bulletin charts predominating effects on oven heat distribution observed in different ranges examined due to such constructional changes as variations in location of oven burner, size and location of oven bottom openings, area and location of flue outlets, changes in oven bottom insulation, and location of the thermostat bulb.

Resultant effects on heat distribution are evaluated on the basis of standard cake-baking tests currently employed in gas range approval tests. Variations in the degree of brownness are accurately determined by a photo-electric reflectometer as used in regular testing procedures. In addition to cakes, pies, cookies and biscuits were baked to be sure that ovens capable of good cake baking performance would handle other types of baking equally well, thus providing a wide degree of flexibility.

Approval Requirements Committee Meeting at A. G. A. Cleveland Laboratories April 13

Former A. G. A. Engineer Rescued at Sea

LT. (j.g.) FRANK FIEDLER of the West Coast American Gas Association Laboratories is home on leave after participation in the invasion of Luzon followed by his rescue at sea when the aircraft carrier on which he was a radar officer was sunk by bombing in the invasion of Iwo Jima with the loss of 350 lives. He was picked up after two and a half hours in the water in a stormy sea at night. Frank arrived home in time for the birth of a daughter, Dorris Ann. He also has a son.

Another participant in the Luzon invasion was Lt. (j.g.) Richard Sailer who was aboard a landing ship. He moved on from there to Leyte from where he wrote that he had just received word of the Cleveland gas fire and was worried about his friends at the Laboratories.

Captain Robert T. Hlavin of Ohio's famed 37th division has been over-seas for 34 months. Latest word is that he is even busier now than when he handled logistics for the Bougainville invasion which he considered a large task, getting hardly any sleep.

Lt. Commander R. B. Kleinhans is now the father of three girls, quietly attempting to catch up with Eddie Cantor with the birth of twins. He writes from Annapolis that John B. Heinicke, also stationed there, has been promoted to the rank of Commander.

Lt. Oscar N. Simmons formerly of the West Coast Laboratories staff now heads the inspection of munitions for the Navy at Las Vegas, Nevada.

Indiana Gas Association Holds Annual Business Meeting

H. G. Horstman

HERMAN G. HORSTMAN, Public Service Co. of Indiana, Inc., Indianapolis, was elected president of the Indiana Gas Association on May 3 at the 35th annual meeting of that organization in Indianapolis. E. Dell Anderson, Northern Indiana Public Service Co., Hammond, was named vice-president and Paul A. McLeod, Public Service Co. of Indiana, Inc., was re-elected secretary-treasurer.

Newly-elected directors are C. K. Graham, Southern Indiana Gas & Electric Co.; H. W. Thornburg, Central Indiana Gas Company (re-elected) and V. C. Seiter, Citizens Gas & Coke Utility, Indianapolis.

The one-day meeting, limited because of transportation restrictions, included reports from the industry's national associations as well as on regional cooperative activities. Representing the American Gas Association were President J French Robinson, John W. West, Jr., assistant managing director; John H. Warden, chairman, Residential Gas Section; and H. Vinton Potter, director, Coordinated Gas Kitchen Program. H. Leigh Whitelaw, managing director, Association of Gas Appliance and Equipment Manufacturers, represented the manufacturers.

Reports of Indiana committees were made as follows: Technical, J. M. Pickford; Accounting, W. M. McDonough; Sales, E. M. Demlow; and Research, Guy M. Johnson. The latter report was supplemented by a talk by Dr. John L. Bray, head of School of Engineering, Purdue University.

President's Address Highlight

Highlight of the meeting was the comprehensive and inspiring address of the retiring president, Clarence W. Goris, of Gary, Ind. After reviewing in detail the valuable work of the Indiana Association and commenting upon the outstanding war record of the Indiana gas industry, he gave a noteworthy and optimistic picture of the place of gas and its responsibilities in the postwar period.

"Our first efforts in the reconversion period," Mr. Goris said, "will be to assist industry in working out its heat-treating problems as they apply to the production of peacetime products. During the war years we have made notable advances, and learned a great deal we did not know before about the utilization of gas for heat-treating and chemical processes. . . . New techniques have been devised, some of which may revolutionize heating operations.

"In the commercial and residential fields there are almost unlimited possibilites. We want to intensify our cooperation with various allied interests—architects, builders, plumbers and dealers—who will be in strategic positions to encourage the application of gas for the greatly increased number of new appliances for cooking, refrigeration, water heating, space heating, and year-round air conditioning. These will be demanded by American citizens for better living when the war's progress allows industry to produce civilian equipment and supplies again."

Mr. Goris described the New Freedom Gas Kitchen Program as "a real help to our sales forces" and a rallying standard, and spoke of the vast potentialities of the CP Gas Range Program. Of the pent-up demand for houses he said: "The gas industry is vitally interested in where these houses will be built in relation to the proximity of our transmission and distribution mains." Turning to the pre-fabrication market, he spoke of the Indiana studies, assisted by Purdue technicians, of the problem of moisture in such houses and commended the A. G. A. Committee on Domestic Gas Research for initiating further research on this subject.

"Our continuing research program," Mr. Goris concluded, "together with those of other state associations, combined with the A. G. A. Industry Research and Promotion Plan, should point the way toward continued advancement of our industry."

Affiliated Association Activities

Florida-Georgia Managers' Conference

W. H. DUGUID, Jacksonville Gas Corp., Jacksonville, Fla., was elected president of the Gas Meters Association of Florida-Georgia at the managers' conference held May 18-19 at the Sheraton Plaza Hotel, Daytona Beach, Florida. W. Bond Collins, Peoples Water and Gas Co., Miami Beach, was selected for vice-president and B. G. Duncan, Florida Power Corporation, was re-elected secretary-treasurer.

The following new directors were named at the meeting: John L. Arnold, H. R. Cloud, C. J. Noda, W. L. Lee, A. J. Lawlor, A. H. Stack, Ted Bergman, J. W. Owen, and L. L. Peters.

Research and sales promotion were the dominating themes at the meeting which included featured speakers from local and national associations. Highlights of the Florida-Georgia gas activities were given in the annual report of President W. Bond Collins. An over-all picture of the operation of the new Gas Industry Research and Promotional Development Program was presented by John W. West, Jr., assistant managing director, American Gas Association. Mr. West's remarks are reproduced elsewhere in this issue of the MONTHLY.

An illuminating report on the industry's greatly expanded research program was presented by E. P. Noppel, chairman, A. G. A. Coordinating Committee on Research. This report will be published in the July-August MONTHLY.

H. Vinton Potter, director, New Freedom Gas Kitchen Program, outlined progress to date in this development and James I. Gorton, CP Range Promotion director, A.G.A.E.M., gave an interesting analysis of gas range statistics. The first day's program concluded with a discussion of Dealer Coordination by G. F. Edwards, manager, Atlanta Gas Light Co., Athens, Ga.

The morning program, May 19, opened with a comprehensive report on the much-discussed Rochester plan of kitchen ventilation. H. A. Brown, director of appliance testing laboratories, Rochester Gas and Electric Corp., supplied complete technical details of this important development.

John M. McNair, vice-president and general manager, Standard Gas Equipment Corp., Baltimore, gave a valuable talk on "A Peek into the Future of Commercial Cooking." The meeting closed with a stimulating and effective presentation of postwar sales promotion plans by R. J. Canniff, advertising and sales promotion manager, Servel, Inc., Evansville, Indiana.

Home Service Conference Planned for Boston

THE directors of The New England Gas Association have approved plans of the Home Service Group of the Association for holding a 5-day Home Service Development Conference in Boston from September 17-21. Speakers and lecturers will address the conference on a variety of basic subjects of direct interest to gas company home service representatives.

Mrs. Lillian P. Dunbar of Cambridge, past chairman of the N.E.G.A. Home Service Group, is the chairman of the N.E.G.A. Home Service Educational Committee. With the aid of about 15 consultants, both within and without the industry, the committee has been preparing plans for the conference for nearly a year. During the first part of the committee's work, Mrs. Hazel Cheever of Arlington was the chairman of the N.E.G.A. Home Service Group. Susan A. Mack of Boston is the present chairman. The group op-

erates as part of the N.E.G.A. Sales Division of which R. E. Finnin of Boston is the chairman.

The Home Service Development Program Subcommittee of the Educational Committee has also prepared a comprehensive outline of text material which will be used as a training course in the local gas companies and which will be in addition to the September conference in Boston. The outline for the company training course covers pertinent gas industry fundamentals, a study of gas equipment, the techniques and operation of home service work and sales training, information on company organization, rate schedules and other company, technical and home service subjects that would be of a special value to persons newly employed as home service representatives.

P. U. A. A. Business Meeting in June

THE annual convention of the Public Utilities Advertising Association, customarily held in June, has been cancelled to comply with ODT regulations. Instead necessary business of the association will be conducted at a two-day business meeting to be held at the Edgewater Beach Hotel, Chicago, on June 5 and 6. Those to attend will be officers, directors, committee chairmen, and chairmen of the eleven regions into which the nation has been divided.

In addition to the discussion of new advertising problems created by recent developments a principal feature of the meeting will be the awarding of prizes for the association's 1945 Better Copy Contest. The latter is the nation's oldest organized advertising copy competition.

Metropolitan Gas Council Elects Wholey

John J. Wholey

JOHN J. WHOLEY, Rockland Gas Company, Spring Valley, N. Y., was elected chairman of the Metropolitan Gas Heating and Air Conditioning Council at the annual meeting on May 16. Edward J. Gerridge, The Brooklyn Union Gas Company, was named vice-chairman and James E. Cook, Westchester Lighting Co., Mt. Vernon, N. Y., was selected for secretary-treasurer.

Principal speakers at the meeting were Gebhardt C. Beck, The Brooklyn Union Gas Company, and W. Daniel Williams, Public Service Electric and Gas Co., Newark, N. J. Mr. Beck presented a valuable paper on "Winter-Summer Water Heating from Gas-Fired Boilers," while Mr. Williams described the Home Planners' Institute of New Brunswick, N. J.

The Home Planners' Institute, one of 70 similar institutes operating in various parts of the country initiated by the National Retail Lumber Dealers Association, is designed to encourage savings which will be earmarked specifically for home acquisition after the war. More than 300 other cities, in addition to those now operating such institutes, have indicated their interest in setting them up. The New Brunswick unit, Mr. Williams said, is sponsored jointly by the Chamber of Commerce, Public Service Electric and Gas Co., and the local newspaper.

It was decided to hold a summer meeting of the Council under the leadership of William J. Schmidt, Long Island Lighting Company, retiring chairman. Tentative date for the meeting is July 27.

Pennsylvania Gas Annual Meeting

Louis C. Smith

LOUIS C. SMITH, president of The Harrisburg Gas Company, Harrisburg, Pa., was elected president of the Pennsylvania Gas Association at the 37th annual meeting of that organization, held May 16 at The Barclay, Philadelphia. Other officers were elected as follows: first vice-president—Frank H. Trembly, Jr., Philadelphia; second vice-president—J. M. Huebner, Lancaster; third vice-president—E. G. Boyer, Philadelphia; secretary—William Naile, Lebanon; and treasurer—James A. Schultz, Reading.

Members of the council elected for three-year terms are Allyn C. Taylor, Reading; H. H. Ganser, Norristown; J. A. Frick, Allentown; and J. M. Traugott, Philadelphia. H. C. Snider, Pottsville, was named to the council for a one-year term.

Due to wartime regulations the meeting was limited to 49 members and business was confined to election of officers, reports of committees and officers. Principal address was made at the luncheon by E. J. Boothby, vice-president and general manager, Washington Gas Light Co., and vice-president of the American Gas Association. Mr. Boothby described the gas industry's new Research and Promotion Plan.

The new president, Mr. Smith, formerly was assistant managing director of the American Gas Association. A graduate of the University of Pennsylvania in Mechanical Engineering in 1907, he joined the United Gas Improvement Co. in 1908. He has been associated with the Omaha Gas Co., was president of the Fulton County Gas & Electric Co. and vice-president of New York Power & Light Corporation.

President-elect Smith, addressing the P. G. A. members, endorsed the new $1,400,000 research and promotional program of the American Gas Association and urged local gas companies to back it up with increased local newspaper and other advertising.

Maryland Association Elects Officers

HENRY S. DAVIS, general manager, Conowingo Power Co., Elkton, Md., was elected president of the Maryland Utilities Association at the April 6 annual meeting. Otis H. Ritenour, comptroller, Washington Gas Light Co., Washington, D. C., was named vice-president and J. Carl Fisher, Consolidated Gas Electric Light and Power Co. of Baltimore, was chosen for treasurer. Raymond C. Brehaut, manager, Suburban Companies affiliated with Washington Gas Light Co., was re-elected secretary.

Directors named at the meeting are: William B. Bennett, Charles P. Crane, Harold G. Hayden, Lewis Payne, Joseph A. Stoll, and D. Edward Stultz.

The newly-elected vice-president, Mr. Ritenour, was 1943-1944 chairman of the A. G. A. Accounting Section and has long been prominent in national association activities.

Wisconsin Officers

M. H. MONTROSS, vice-president of the Wisconsin Public Service Corp., Wausau, has been elected president of the Wisconsin Utilities Association, succeeding S. B. Sherman, Racine. Mr. Sherman becomes chairman of the Association's advisory council.

B. E. Miller, manager, rate and valuation department, Wisconsin Power & Light Co., Madison, was named vice-president. Alfred Gruhl, assistant research engineer, Wisconsin Electric Power Co., was re-elected treasurer.

Surface Combustion Gets Top Rating

THE first company in the Columbus, Ohio, sub-region of the Army Air Forces to win recognition for its uniform quality of workmanship by being permitted to manufacture with a minimum of government inspection is Surface Combustion Corporation, 400 Dublin Avenue, it was announced May 17.

The Army Air Forces has notified the company, which makes "Janitrol" aircraft heaters, that it has been granted "Quality A" approval without qualifications, which means that production is so uniformly accurate that regular inspection of all production is unnecessary.

Lampheads Wanted

WILL any company or individual who has two or three square gas street lampheads which are not in use please get in touch with James E. Cook, Westchester Lighting Company, Mt. Vernon, N. Y.? Please state selling price.

Personal and Otherwise

Consolidated Edison Vice-President

Harland C. Forbes

HARLAND C. FORBES was elected vice-president of Consolidated Edison Company of New York, Inc., in charge of development and planning, at the organization meeting of the company's board of trustees, held May 22. Other officers were re-elected. Mr. Forbes succeeds John C. Parker, who having passed the company's retirement age, was retained as a consultant for special assignments from the president.

Mr. Forbes has been assistant vice-president of the company since 1940. He was born on February 21, 1898, at Colebrook, N. H., and was graduated from the University of New Hampshire in 1921. He received a Master's degree at Massachusetts Institute of Technology in 1923. He served two years as an instructor at M.I.T., spent one year with Western Electric Company, and joined The New York Edison Company in 1924. He became research engineer of the company in 1928 and system engineer in 1932.

Mr. Forbes has been active for many years in technical and engineering societies.

Gas Institute Elects Trustees

THE 64 members of Institute of Gas Technology held their fourth annual meeting on Friday, May 18 at the Chicago Club, Chicago, Illinois.

The following seven trustees were elected to serve for the next three years:

F. M. Banks, Henry R. Cook, Jr., E. M. Farnsworth, Robert B. Harper, George S. Hawley, Marcy L. Sperry, and Paul R. Taylor.

At a subsequent meeting of the Board of Trustees, Frank H. Lerch, Jr. was elected chairman of the board, and Robert B. Harper and Raymond J. Spaeth were elected to the offices of secretary and treasurer, respectively. Henry T. Heald continues to serve as president of the Institute.

Leon J. Willien is acting director following the resignation of John I. Yellott, who is embarking on an extensive research on turbine locomotive design.

Antrim Rejoins Bryant

MAJOR WILLIAM D. ANTRIM has returned to the Bryant Heater Company after nearly two years of service with the United States Army Ordnance Department as a supervising research and development expert on artillery ammunition, according to announcement by Lyle C. Harvey, president. Mr. Antrim will devote his time exclusively to the adaptation of the new Bryant automatic safety pilot to gas range ovens and broilers.

A prominent member of the American Gas Association Approval Requirement Committee on Domestic Gas Ranges and Hotel and Restaurant Ranges, Mr. Antrim is an authority in gas range design and control. He was active in many pioneering developments in the field, especially in the adaptation of single point flash tube ignition to gas ranges.

Elected Vice-President of Philadelphia Electric

R. G. Rincliffe

R. G. RINCLIFFE was elected vice-president in charge of electric operations of the Philadelphia Electric Company April 24, according to an announcement by H. P. Liversidge, president.

Mr. Rincliffe entered the utility business as an engineering assistant at Chester, Pa., in 1923. Following a succession of various assignments, he was named superintendent of gas production in 1927. Four years later he was made superintendent of gas manufacturing for the entire company.

In 1938, he was named purchasing agent, continuing in that capacity until 1941, when he was appointed manager of electric station operations, the position he held at the time of his selection as vice-president.

Born in Sandusky, Ohio, Rincliffe attended the public schools of that city. He entered Yale College in 1917, but left the following year to serve with the Navy in World War I. Returning to Yale after the war, he was graduated in 1921. In 1923, he was graduated from the Massachusetts Institute of Technology as a master of science in chemical engineering.

Mr. Rincliffe is a member of the American Society of Mechanical Engineers, American Institute of Electrical Engineers, Pennsylvania Electric Association, Electrical Association of Philadelphia, American Gas Association, Pennsylvania Gas Association, Philadelphia Chamber of Commerce and Board of Trade, and the Franklin Institute.

Gregg Joins Bryant

R. C. GREGG has joined the engineering staff of the Bryant Heater Company, Cleveland, Ohio, it is announced by Lyle C. Harvey, president.

Formerly assistant chief research engineer of the American Gas Association Testing Laboratories, Mr. Gregg is a native of Tiffin, Ohio, and a graduate of Ohio Wesleyan University. He obtained his Master of Science degree in Chemical Engineering from Ohio State University in 1925, and did additional graduate work in chemical engineering in that institution.

Mr. Gregg will be engaged in fundamental research work for the Bryant Heater Company, leading to new product development in the gas heating field.

Arkansas Companies Elect Weyland

A. H. Weyland

A. H. WEYLAND, general superintendent of the Arkansas Natural Companies since 1933, was elected to the office of vice-president and general manager, and director, of the Arkansas Louisiana Gas Company, Arkansas Natural Gas Corporation, Arkansas Fuel Oil Company, and Arkansas Pipeline Corporation, on May 17 at a meeting of the board in New York City, the home office at Shreveport, La. announced.

The resignations of D. W. Harris, former president; and B. R. Muirhead, former treasurer, of the Arkansas Natural Gas Corporation, were accepted by directors. Mr. Harris and Mr.. Muirhead resigned to accept executive positions with another organization which will be announced at a later date.

Joining the Cities Service organization in 1919 after graduation from Texas A. and M. College, where he received a B. S. degree in electrical engineering, Mr. Weyland moves into his new office with 26 years of well-qualified experience in the gas and oil business.

He is a member of the Shreveport Chamber of Commerce; immediate past president of the Texas A. & M. Club of Shreveport; member of the Mid-Continent Oil and Gas Association; American Petroleum Institute; American Gas Association; American Institute of Mining and Metallurgical Engineers; Southern Gas Association; director and vice-president of the Cities Service Defense Corporation; and director and vice-president of Orange State Oil Company.

Two other promotions announced by the board included that of H. T. Goss, chief engineer of all Arkansas Natural Companies, who will assume the position formerly held by Mr. Weyland; and M. J. Lasseigne who was named treasurer of the Arkansas Natural Gas Corporation and Arkansas Louisiana Gas Co., replacing B. R. Muirhead.

Miss Dillon Re-elected School Board Head

Mary E. Dillon

MISS MARY E. DILLON, president of the Brooklyn Borough Gas Company, who last year was the first woman to be elected president of the New York Board of Education, was unanimously re-elected to that post on May 7.

The outstanding woman executive in the gas industry, Miss Dillon has many other "firsts" to her credit and ranks as one of America's great women. In 1942 the Brooklyn Chamber of Commerce chose her as "citizen of the year."

In accepting re election to the school board, she promised that "the children of tomorrow will have the school of tomorrow in which to learn." Education is "the key tool of rebuilding," she added.

Martin Joins Poe

Edward R. Martin

EDWARD R. MARTIN, formerly chief marketing statistician for Servel, Inc., Evansville, Ind., has resigned that position to join the consulting organization of E. Holley Poe in New York.

Before going to Servel in September 1944, Mr. Martin was associated with the American Gas Association for nine years as supervisor of statistical activities.

He is a graduate of Pace Institute, New York.

Lone Star Gas Company Executive Changes

APPOINTMENT of E. E. (Jerry) Stovall as superintendent of Gas Measurement for Lone Star Gas Company, headquarters in Dallas, Texas has been announced by Julian L. Foster, superintendent and chief engineer of the company. The appointment was effective June 1. Mr. Stovall succeeds Don A. Sillers who has been superintendent of gas measurement for the company since December, 1925. Mr. Sillers has resigned to enter private business.

L. B. Denning, Jr., operating manager for the general division of distribution, Lone Star Gas Company, Dallas, has announced the appointment of Homer V. Smith as the new manager in charge of the company's Cleburne (Tex.) district, succeeding the late Phil E. Warren. Mr. Smith had been in charge of the company's distribution district at Taylor, Texas. He was succeeded there by Ross L. Dixon who was transferred from the company's Athens, (Tex.) district of distribution. S. H. King, formerly storekeeper for Lone Star at Temple, succeeded Mr. Dixon at Athens. Another appointment was that of Robert L. Freeman, former subdistrict manager for Lone Star at Frost, Texas, who has been placed in charge of the company's subdistrict at Italy, Texas.

Wesley F. Wright, general manager, Dallas division of distribution of Lone Star Gas Company, has announced the appointment of J. M. Lynn, Jr., as new business manager for the Dallas Division. Mr. Lynn succeeds C. K. Patton who resigned May 1, to accept a position as southern manager of Ward Heater Co., with offices in Dallas.

To Direct Bryant Industrial Relations

CHARLTON GILBERT has been appointed industrial relations director for the Bryant Heater Company, Cleveland, according to announcement by Lyle C. Harvey, president.

A native of New Haven, Conn., Mr. Gilbert is a graduate of Choate School, and received his Bachelor of Arts degree from Washington and Lee University, where he majored in personnel problems and in economics. He is a member of Phi Kappa Psi social fraternity.

Prior to his new connection with the Bryant Heater Company organization, Mr. Gilbert was personnel director for the A. C. Gilbert Co., New Haven.

Hall Appointed to Coordinate A. G. A. Gas Production Research

Edwin L. Hall

APPOINTMENT of Edwin L. Hall as secretary-coordinator of the Gas Production Research Committee of the American Gas Association effective May 15 has been announced by J French Robinson, president of the Association. Mr. Hall resigned as manager and treasurer of the Manchester Gas Company, Manchester, N. H., to join the A. G. A. staff. His successor at Manchester is Edward Niederer, Jr., formerly of the Bridgeport Gas Light Co., Bridgeport, Conn.

As secretary-coordinator of the committee headed by P. T. Dashiell of Philadelphia, Mr. Hall will supervise gas production research activities of institutions and plants where projects sponsored by the committee are undertaken.

A 1924 graduate of Ohio State University with a Bachelor of Metallurgical Engineering degree, Mr. Hall has spent his entire business career in the gas industry and has had extensive operating experience with various gas production processes. Following graduation from college he was employed by the United Gas Improvement Company as cadet engineer at their experimental station at Point Breeze, Philadelphia Gas Works Company. Four months later, in November, 1924, he was transferred to the Syracuse Lighting Company where he supervised the operation of water gas sets.

In the spring of 1925 following a six weeks' period in Manchester, N. H., observing the operation of U. G. I. vertical reports, he returned to Syracuse to become shift foreman of a new coal gas plant. He became an expert operator for the U. G. I. Contracting Company in July 1926 and a year later was appointed an engineering assistant in the U. G. I. operating department. In May 1929, he was transferred to the company's research department where, for three years, he collaborated with H. G. Terzian in the development of refinery oil gas reforming processes and of heavy oil processes. This work lead to the development of the U. G. I. Heavy Oil Process, utilized in many large plants, notably Philadelphia and Consolidated Edison Co. of New York, and also to the installation of comparatively large oil gas reforming plants in Chester, Pa. and Brooklyn.

Mr. Hall was promoted to assistant director of the U. G. I. research department in 1932 and during the next five years was engaged in work on production, distribution and utilization phases of the gas industry. In 1936 and continuing to 1940, he was in charge of the development of a large U. G. I. engineering laboratory at Chester, Pa., as well as continuing supervision of the appliance laboratory. He joined the Manchester Gas Company as manager and treasurer in 1940.

Mr. Hall has been active in national and regional association work. For the American Gas Association, he served as chairman of the Subcommittee on Low Gravity Water Gas in 1929; chairman of the Subcommittee on Reforming Refinery and Natural Gases in 1930; and chairman of the Subcommittee on Modification of Plan Operation to Accommodate Various Gas Mixtures in 1931. While in Manchester, he was a director of the New England Gas Association in 1943, 1944 and 1945 and served as chairman of various N. E. G. A. research and postwar planning committees.

On Buffalo Board

GEORGE J. BRETT, controller and a director of Niagara Hudson Power Corporation and John T. Kimball, a vice-president and director of Central New York Power Corporation and of New York Power and Light Corporation, Niagara Hudson subsidiaries, were elected directors of Buffalo, Niagara and Eastern Power Corporation at the annual meeting of stockholders on May 8.

Porter C. Savage Retires After 32 Years

PORTER C. SAVAGE, Consolidated Edison Co. of New York assistant vice-president for design, inventory purchasing and stores, retired May 1 after thirty-two years with the company. From the day he was hired in 1913, Mr. Savage specialized in the company's coal supply and for the past ten years he has been continually active in matters affecting the coal industry, particularly in its relation to the consumer.

From the spring of 1942 to the fall of 1943 Mr. Savage spent much of his time as a coal consultant in Washington where his job was to see to it that the Army and Navy did not run out of coal. His assignment was at the request of Donald M. Nelson, then in charge of purchasing for the Office of Emergency Management.

Last summer Harold L. Ickes, solid fuels administrator, appointed Mr. Savage a member of the Solid Fuels Advisory War Council whose members represent various industries.

Promotional Committee Members Appointed

D A. HULCY, president, Lone Star Gas Co., Dallas, Texas, and chairman of the newly-formed American Gas Association Promotional Committee, has announced that the following will serve as members of this important committee:

Members At Large

Joseph N. Greene, president, Alabama Gas Co., Birmingham.
W. M. Jacobs, general sales manager, Southern California Gas Co., Los Angeles.
Dean H. Mitchell, president, Northern Indiana Public Service Co., Hammond.
Irving K. Peck, president, Binghamton Gas Works, Binghamton, N. Y.
Col. Hudson W. Reed, president, Philadelphia Gas Works Co., Philadelphia, Pa.
R. J. Rutherford, vice-president, Worcester Gas Light Co., Worcester, Mass.
F. C. Smith, president, Houston Natural Gas Corp., Houston, Texas.
Henry P. J. Steinmetz, vice-pres. in charge of sales, Public Service Elec. & Gas Co., Newark, N. J.

Ex-Officio

Everett J. Boothby, (Chairman, Manufactured Gas Department), Washington Gas Light Co., Washington, D. C.
P. T. Dashiell, (Chairman, Gas Production Research Committee), Philadelphia Gas Works, Philadelphia, Pa.
R. H. Hargrove, (Chairman, Natural Gas Department), United Gas Pipe Line Co., Shreveport, La.
Edward P. Noppel, (Chairman, Coordinating Committee on Research) Ebasco Services, Inc., New York, N. Y.
Charles A. Tattersall, (Chairman, Publicity Committee), Niagara Hudson Power Corp., New York, N. Y.
John H. Warden, (Chairman, Residential Gas Section), Oklahoma Natural Gas Co., Tulsa, Okla.
H. Carl Wolf, (Chairman, Committee on National Advtg.), Atlanta Gas Light Co., Atlanta, Ga.
Harry K. Wrench, (Chairman, Industrial & Commercial Gas Section), Minneapolis Gas Light Co., Minneapolis, Minn.

First meeting of the committee was held May 21 in New York.

Public Service Directors

LYLE McDONALD and Jacob T. Barron have been elected directors of Public Service Corp. of New Jersey to fill vacancies occasioned by the death of the corporation's former president, Edmund W. Wakelee, and the resignation of John L. O'Toole who is ill.

Mr. McDonald, vice-president and comptroller of Public Service, has been with the company since 1916. He started as an accountant, was made comptroller in 1937 and vice-president last year.

Mr. Barron, vice-president in charge of electric operation, Public Service Electric and Gas Company, started with Public Service in 1907 and has been a vice-president since 1935.

Lt. Col. Stewart Home

DONALD W. STEWART, who left his position as vice-president and general counsel of Union Gas System, Inc., Independence, Kansas, in May, 1943 to serve in the Mediterranean and European Theatre with the Liaison Section of the French Air Forces, has returned to this country and has been placed on an inactive duty status with the grade of Lt. Colonel in the Air Corps. Mr. Stewart, who is a veteran of World War I has, by his recent tour of duty, increased his total of overseas service to 45 months and his collection of battle stars to fourteen.

Miss Crane Retires

AT a buffet supper held at the Glenwood Range Company, Taunton, Mass. officials and office personnel of the company paid tribute to Miss Myra E. Crane upon her retirement after fifty-four years of continuous service with the company. Miss Crane, who lives at 13 Charles Street, Taunton, began her work in the Glenwood Range Company office in 1891, when the company was only twelve years old.

In recognition of this outstanding record the directors of the company adopted a resolution commending Miss Crane for her years of faithful service.

Anderson Advanced by Bureau of Mines

C. C. ANDERSON, engineer-in-charge of the Bureau of Mines Exell, Texas, Helium Plant since its opening in March 1939, has been appointed assistant chief of the Petroleum and Natural Gas Division in Washington, D. C., Dr. R. R. Sayers, Bureau Director, announced May 10.

Natural Gas Group Names Whyte

APPOINTMENT of Louis E. Whyte of Washington as supervisor of the educational department of the Independent Natural Gas Association effective May 1 was announced by John A. Ferguson, executive director.

Mr. Whyte has had 15 years of experience in Washington with newspapers, trade journals and business information service organizations. He left the staff of the Bureau of National Affairs, an affiliate of the United States News organization, to accept the I.N.G.A.A. position.

His work will include the handling of news releases, collection and dissemination of material of interest to Association members and conducting a program designed to educate the public generally as to the problems of the industry.

Hutchins Named Manager

P M. HUTCHINS has been named manager of advertising and sales promotion for The National Radiator Company, Johnstown, Pa., it is announced by President R. S. Waters.

Formerly advertising director of three daily newspapers in Georgia, Mr. Hutchins had been associated from 1932 to 1944 with the Pittsburgh Sun-Telegraph, in recent years as general promotion manager.

Convention Calendar

JUNE

5	•American Gas Association Southwest Personnel Conference, Washington Youree Hotel, Shreveport, La.
5- 6	•Public Utilities Advertising Association, Edgewater Beach Hotel, Chicago, Ill.
6- 7	•A. G. A. Local Conference on Domestic Gas Research, Hotel Stevens, Chicago, Ill.
7	•American Gas Association Midwest Personnel Conference, Kansas City, Mo.
8- 9	•French Gas Association, First Liberation Meeting, Paris, France.
12-13	•Institution of Gas Engineers, Annual Meeting, London, England.
14	•British Commercial Gas Association, Annual Meeting, London, England.
15-16	•Interstate Oil Compact Commission, Oklahoma City, Oklahoma.
19-22	•Canadian Gas Association, Annual Convention, Murray Bay, Quebec.

Obituary

PHILIP G. GOSSLER, chairman of the board of the Columbia Gas & Electric Corporation, died May 18 in the Doctors Hospital, New York, after a brief illness. He was 74 years old.

Mr. Gossler was among the last of the "utility fathers," ranking prominently with such figures of the past as H. M. Byllesby, founder of the Standard Gas and Electric Company; Sydney Z. Mitchell, co-founder of the vast Electric Bond and Share system; H. L. Doherty of the Cities Service Company; Samuel W. Insull, who guided the destinies of the utility empire in the Middle West for more than a quarter of a century; Floyd Carlisle, long head of the Niagara Hudson Power Company, and Wendell L. Willkie.

One of the leaders in the development of the Columbia Gas & Electric Corporation, Mr. Gossler, with the late George W. Crawford, president of the Ohio Fuel Corporation, directed in 1926 the merger of two of the largest gas systems in the country, the Ohio Corporation and the Columbia Gas & Electric Company into the present corporation.

Mr. Gossler had served with the Edison General Electric Company in Chester, Pa.; the United Electric Light & Power Company in New York City; the Royal Electric Company in Montreal, Canada; the Montreal Light, Heat & Power Company; J. G. White & Company of New York City, and from 1909 to 1922 he was chairman of the board of the Columbia Gas & Electric Company.

Born in Columbia, Pa., he was educated at Pennsylvania State College and Columbia University. His late home was at 14 East 65th Street, New York.

He was a director of the Guaranty Trust Company of New York, a trustee of the Edison Electrical Institute, a former vice-president of the Edison Pioneers and the New York Electrical Society and a member of the American Institute of Electrical Engineers, American Gas Association, Association of Edison Illuminating Companies, Phi Kappa Sigma and the Pennsylvania Society.

Surviving are his wife, Mrs. Georgia S. Gossler, and two children by a former marriage, Mrs. Katherine G. Clay, and Lieut.-Col. Philip Gossler Jr., now serving in Italy.

CHARLES O. PRATT, valuation engineer for the Equitable Gas Company and the Pittsburgh and West Virginia Gas Company, Pittsburgh, Pa., died May 1. He was fifty-nine years old.

A native of Chelsea, Mass., Mr. Pratt was a graduate of the University of Maine, receiving his degree in Civil Engineering in 1910. He had spent virtually all of his career in the gas industry. Prior to going to Pittsburgh in August, 1937, he had been associated with Semet Solvay Engineering Company, Byllesby Engineering and Manufacturing Corp., the Pittsfield Coal Gas Company and other organizations.

LEWIS STEPHENSON, an account executive of McCann-Erickson, Inc., advertising agency which handles the American Gas Association's domestic gas advertising, died May 25. His age was 64.

Since the inception of the gas industry's national advertising program nine years ago Mr. Stephenson had assumed a tremendous amount of detailed work in connection with the agency's handling of that account. He enjoyed a wide acquaintance among advertising men and women in the gas industry and was particularly popular with the members of the Committee on National Advertising, and the Subcommittee on Approval of Domestic Gas Copy.

Mr. Stephenson joined McCann-Erickson in 1919.

FRED S. DEWEY, general sales manager of the Cincinnati Gas and Electric Company since 1928, died May 27. Mr. Dewey, a graduate of Iowa State University in 1908, resigned as sales manager of the Kansas City Power and Light Company to go to Cincinnati in 1928.

H. O. Loebell

H. O. LOEBELL, gas consultant for Cities Service and other companies and one of the best known engineers in the gas industry, died May 3 after a short illness. He was 59 years old.

Prominent in American Gas Association activities and one of its most indefatigable workers, Mr. Loebell in 1934 won the Charles A. Munroe Award for distinguished service and outstanding contributions to the gas industry. He lectured often in colleges and universities and wrote many technical articles. In the early part of the war, he served as a consultant in the fuel and power section of the Office of Civilian Supply, War Production Board.

Mr. Loebell entered the public utility business in 1904 as a laboratory technician for a gas and electric utility in Denver, Colorado, which until recently was a subsidiary of the Cities Service Company. Later he was promoted to chief industrial sales engineer for all the gas properties in the Cities Service system. This work took him all over the United States and permitted him to form an extraordinarily wide circle of friends and acquaintances.

He later became vice-president and general manager of the Combustion Utilities Corporation, one of the leading companies in the country devoted to research in the production and utilization of natural and manufactured gas. He was also an executive and contributed much to the development of Surface Combustion Company, one of the nation's largest gas equipment manufacturers, and General Atlas Carbon Company, producer of carbon black.

When the natural gas business began a broad expansion in 1927, Mr. Loebell took to the field for intensive technical studies on how to expand the production and uses of gas. He made broad market studies in such cities as Chicago, Pueblo, Denver and other major cities in the country.

He is survived by his wife, Mrs. Lillian D. Loebell, one daughter, Mrs. Crane Haussamen of New York, and two sons, Richard E. Loebell of Chicago and S/Sgt. Henry Loebell, now serving with the ATC in the Pacific.

MISS MARY SPEAR, a veteran of natural gas Association service, died at her home at 51 New Street, East Orange, New Jersey on April 28 at the age of 66.

Miss Spear was in charge of membership records for the American Gas Association until a short time before she retired on March 1, 1944. She had completed more than twenty-five years' service with the Association and the former Natural Gas Association of America.

Known to more old-time natural gas men than probably any other person, Miss Spear had not missed a natural gas convention in her first twenty years in the industry. She joined the Natural Gas Association of America in 1919 as librarian at its Pittsburgh headquarters. She became a part of the A. G. A. staff in 1927 at the time the Natural Gas Association merged with the A. G. A.

In recent years, she was proof reader for the A. G. A. MONTHLY and other Association publications and also assisted in the work of the Natural Gas Department.

Before entering gas association work, Miss Spear was employed as librarian in the Carnegie Library at Braddock, Pennsylvania, the first Carnegie Library in the United States. Later, she was in charge of the Carnegie Library at McKeesport, Pennsylvania.

C. C. Abbott

CORWIN CARLETON ABBOTT, who was recently appointed sales manager of the Gas Products Division, Pittsburgh Equitable Meter Company, died suddenly in Cleveland, Ohio, May 8, while attending a committee meeting of the American Gas Association.

Mr. Abbott, who was 56, became connected with the Pittsburgh firm in 1936, and previous to his sales appointment had served as acting chief engineer since 1941. He is credited with the development of many regulating and control devices that are widely used on war instruments.

Before going to Pittsburgh he was an engineer for the Connelly Iron Sponge and Governor Company of Chicago.

Born in Saunemin, Illinois, Mr. Abbott was a graduate of Purdue University. He was a commissioned officer in the Field Artillery in World War I and an active member of the American Legion.

A. G. A. DEVELOPMENT PLAN

(Continued from page 252)

think you will be interested to know the extent to which the same companies are contributing to all of these activities.

First, as to the National Advertising Fund—after nine years 84% of the Association company membership provides 90% of this fund and 57 non-member companies provide the remaining 10%.

Second, as to the new Research and Promotional Fund—75% of the Association membership is putting up 92% of this fund and 49 non-member companies are providing the remaining 8%.

While the rates of contribution were calculated upon 70% of the industry's 1941 revenues, subscriptions received are based upon 1943 revenues which reflected an increase of 16½%. As a consequence, subscribing companies still represent a little less than 70% of the gas industry and the Special Committee is continuing its efforts to obtain additional subscriptions to assure the continuity of the plan and facilitate lower subscription rates in the future.

Bird'seye View of Plan

That is a birdseye view of the financial, administrative and operating picture of the Research and Promotional Plan and of the Association as it is operating today. I do not need to explain that it does not describe many other important activities of the Association which do not fall directly within the categories of research and promotion although their cost is included.

Now what do these funds and activities add up to in terms of the industry? They mean that the gas utility industry with an annual income of $1,100,000,000, is spending $2,000,000 a year or a little under 1/5 of 1% for concerted activities on behalf of itself and its customers. They mean that out of the industrys' 150,000 employees, 1,300 or less than 1% are devoting part of their time to the direction and supervision of these activities. These are small percentages of revenue and manpower to be devoted to the concerted efforts of an industry composed of many small units, none of which is big enough to dominate the picture and assure its future.

Every commanding general has one recurring nightmare. It is that the forces under his command will be split into separate groups for attack and defeat by the enemy. More than forty years ago Henry L. Doherty outlined his conception of the ideal gas association. Among other things he said that "under proper conditions there should be one, and only one, gas association of national character." The American Gas Association has played that role since 1927 and it is to be hoped that it will continue to prove sufficiently responsive to play this role in the future.

So far as headquarters' personnel is concerned, we are now in good company in saying that we, like Solomon, ask from the Lord "neither riches, power nor long life, but only for an understanding heart to deal wisely with the problems" of our industry and our time.

THINGS YOU'LL SOON FORGET

HOWARD W. NEWTON
Vice-President, J. M. Mathes, Inc.

An idea that's worth putting over is worth working over.

• • •

If you have to get *typed* as a special kind of writer, get typed as a *good* writer.

• • •

Don't be a griper. The field is over-run with experts.

• • •

Handle humor in copy so that a reader's urge to laugh won't stifle his yen to buy.

• • •

Everybody takes orders from somebody.

• • •

The man who admits he has a lot to learn has learned a lot.

• • •

When your work speaks for itself, don't interrupt!

• • •

Judge it with your grey matter before you put it in black and white.

• • •

When in doubt, never lead with your chin.

• • •

If an advertisement doesn't make a good first impression, it has made its last one.

—*Advertising and Selling.*

Louisiana Gas Up

LOUISIANA natural-gas production in 1944 totaled 799,521,705,000 cu.ft., compared with 699,413,415,000 in 1943, Joseph L. McHugh, state conservation commissioner, announced recently.

SAGA OF A FRONTIER FUEL

(Continued from page 259)

the development of the natural gas business his life's work and managed the destinies of the Provincial and Union interests wisely and well, earning the title "Dean of the Gas Industry of Canada." Eugene, ever the "prospector," in 1909 went to Alberta as geologist and consulting engineer for the Canadian Pacific Railway and while there discovered the Bow Island gas field, 40 miles west of the Medicine Hat field which had been discovered in 1890. He formed a company and purchased the Bow Island territory from the railway and in 1912 constructed a 200-mile 16-inch pipe line to Lethbridge, Calgary, and other places along the line. This pipe line was the longest one of its size in the world at that time. Later he located the Viking field in Alberta and a 75-mile line was laid to supply Edmonton. From 1903 to 1905 he was president of the Canadian Mining Institute and in 1906 became a fellow of the Geological Society of Amer-

ica. Napoleon Coste, the father, died at his home in Amherstburg, in 1910.

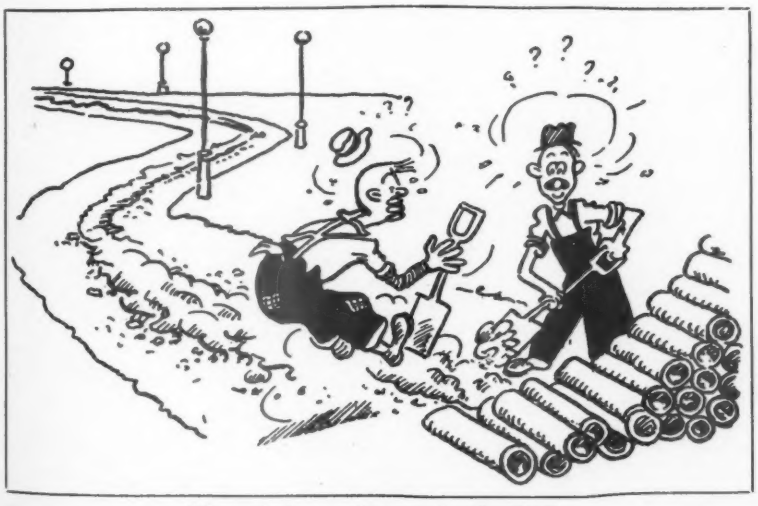
For much of the information in this paper we are indebted to Denis Coste's two sons-in-law, S. A. Morse and R. L. Bevan, and to E. C. Steele, general superintendent of Union, who rose to that position from a team driver with Provincial. Mr. Morse joined Volcanic Oil and Gas in 1915, and today is chairman of the board of Union. Mr. Bevan started with Volcanic in 1911, went to Calgary between 1912 and 1921, returned to do deep well drilling in Essex County for the Eugene Coste Exploration Company and in 1923 joined the Union organization. He is now its chief engineer.

General manager of the Union Company is Lt. Col. Thomas Weir. S. B. Severson is general manager of the Dominion Company and C. N. Glenny of the Provincial Company. Medina, Central Pipe Line and American Engineering are managed by R. L. Pattinson.

In naming their operating company The Volcanic Oil and Gas Company, Limited, the Coste brothers indicated Eugene's adherence to the inorganic theory of the origin of petroleum. He never deviated from this view. He first publicly proclaimed his belief before the Canadian Mining Institute in 1900, gave a paper entitled "The Volcanic Origin of Natural Gas and Petroleum" before the same society in 1903 and before the American Institute of Mining Engineers and the Mining and Metallurgical section of the Franklin Institute. This provoked considerable international comment on the theory, as did a paper read in 1911 before the Institution of Mining and Metallurgy at London, England, entitled "Fallacies in the Theory of the Organic Origin of Petroleum." In 1923 he further supported his igneous theory.

Whether he was right or wrong, in a historical sense the name, bestowed in 1906, might well be said to aptly describe in many respects the explosive period of sharp competition and rate wars which marked the early days of gas distribution in both the United States and Canada. The challenges of those days were part of the growing pains of a rapidly expanding industrial new world in which the process was marred many times by unfortunate incidents and concessions affecting the by-products of oil and gas, railroad, and industrial expansion, and often passed by so rapidly that their full effect was not fully realized until years later.

By 1919 according to figures compiled by D. A. Coste, a total of 2,923 wells had been drilled in Ontario of which 1,420 were in operation. Their total cost was estimated at $7,415,000. An additional $10,500,000 had been expended on pipe lines and together with other expenses he estimated that the total outlay had been over thirty millions. Some of the aspects of this development and the trials and tribulations of the early pioneers who made this history will be discussed in the concluding installment.



"My gosh, Joe, we forgot to lay the pipes"

POSTWAR GAS RANGE HORIZON

(Continued from page 256)

The electric range can be a serious threat if we fold up and let it. But let's try to dissolve some of the pessimism in our industry. We are never going to get anywhere if we think we are licked.

Let's not kid ourselves, and let's not let other people kid us. Let's look the facts squarely in the face. If I may borrow a phrase from our late President Roosevelt—"The only thing we have to fear is fear itself."

So, let's stop worrying about competition. If the gas industry will spend as much time and energy in selling modern gas cooking in the future as it has spent in talking about electric cooking, I don't think we will have much to worry about.

A PUBLIC UTILITY CREDIT POLICY

(Continued from page 278)

with the names of all newcomers to their respective cities, whereupon the bureaus immediately obtain credit reports from bureaus at their former locations. Such cooperation helps the bureau, the local merchants, the utility, and frequently the customers as well.

The use of inquiry cards between utilities themselves is another source of information which is helpful. It is found, however, that some utilities are reluctant to answer such inquiries, presumably because they have not maintained records from which the answers are quickly and easily obtainable. If a customer's record has been good it is a matter of courtesy to him that the inquiring company be told about it. On the other hand, courtesy and cooperation with the inquiring utility should cause it to receive a prompt report in regard to an unsatisfactory credit risk. It is to be regretted that all utilities are not able to cooperate in this respect.

It goes without saying that if utilities are to have credit policies comparable to those of other retail business, they must have credit men with the required training and ability. This means that they must know how and where to secure needed information and be able to apply good judgment to all credit and collection operations. Their value will be enhanced by contact with other credit and bureau men at the meetings sponsored by the credit associations. Here, also, they will be able to dispel the common belief that with utilities it is simply a case of securing *all* accounts by deposit and immediately suspending service to *all* delinquents.

The fundamentals of a credit policy for utilities would therefor seem to be:

a. Greet your prospective customer cordially. Interview him privately.

b. Ask sufficient questions to permit you to know those things you should for your mutual interest.

c. Accept his signature on his first applica-

tion if you wish. Don't demand it because of "policy."

d. Don't ask for a deposit unless you know his credit standing is unsatisfactory.

e. Allow service to be made available at once, even if further credit investigation is to be made.

f. Establish a record that will enable you to know your customer so you can authorize credit sales promptly and refund deposits automatically when experience justifies this action.

g. Use your customer's record as a basis for collection action on delinquent accounts, thereby assuring the type of action each account should receive.

h. Patronize and give wholehearted support to your local Credit Reporting Agencies. Use other credit information channels freely.

i. Have your credit man become active in your local Credit Associations. The benefits should be mutual.

Credit is used in retail business as a service and convenience to customers, and it seems that utilities should look upon it in the same light. Retail credit policies are based on constant research and long experience. Utilities have likewise had long experience and done considerable research, but the results are not shown in uniformly improved credit technique. The results in other retail businesses have shown policies to be fundamentally sound. Application of similar policies in the utility field should have comparable results.

As we begin a new era of business expansion with the end of the war it appears that more favorable customer reaction will result from policies that are like and not different from those generally used. *In the last analysis, there seems to be no reason to be different unless we can be better.*

To Survey Field of Business Statistics

A BROAD survey of the entire field of business statistics will be made by a newly created committee of the Chamber of Commerce of the United States.

The committee, which will be headed by Herman Steinkraus, president of the Bridgeport Brass Company, Bridgeport, Conn., will attempt to determine to what extent government should participate in business reporting and how much reporting and dissemination of facts business should conduct on its own account.

The entry of the United States into the war brought a need for collection of many statistics about business operations which had not before been gathered. The new Chamber committee will study the situation, with a view to recommending what statistical data required by war can be dispensed with when peace is restored and what new kinds of statistics would be helpful in a peacetime economy.

The committee will go beyond the work of the Advisory Committee on Government Questionnaires, set up by the Chamber and other organizations. The latter committee, established in October, 1942, at the request of the Director of the Bureau of the Budget for the purpose of advising the Bureau on simplification of government questionnaires and reduction in reporting requirements, has confined itself to procedural questions and has purposely avoided dealing with legislation or with basic reporting policies.

It is realized that certain statistical data would be extremely helpful in the reconversion period, and the committee therefore will undertake to develop suggestions that will be useful when transition from war to peace gets under way.

Among proposals for facilitating the reconversion of business to peacetime operation are some which are predicated on extensive use of statistics by government agencies for forecasting labor requirements, national income and capital investment. The new committee will undoubtedly wish to examine the effects and implications of such proposals. It will want to determine whether safeguards should be provided against new demands for statistics from those who advocate greater regulation of business and who seek extensive data for purposes of accomplishing their objectives.

Policies recommended by the committee will guide the officers and members of the Chamber in dealing with these demands and in developing statistical governmental and non-governmental policies and procedures most helpful to business in planning postwar activities.

Invitations to membership on the Chamber's new committee have been extended to a group of representative business executives, economists, association executives and others qualified by training and experience to furnish sound counsel. Organization and development of material for the committee will be conducted by the Chamber's Economic Research Department, with Arthur B. Gunnarson in charge as secretary of the committee.

Secret Gasworks in England

THE five-year-old secret of Blackpool's "phantom" gasworks can now be revealed. Since July, 1940, a new £440.30 gas-producing plant has been in operation within a mile of the town centre. Its situation, size, in fact its very existence, has been kept a secret until now.

The works, first planned in 1932, were to have been put into operation at the end of 1945, but have actually been producing gas since the middle of 1940. Since then, 7,000 million cu.ft. of gas and 420,000 tons of coke have been produced.

Although few Blackpool people knew the new gasworks was in production, it was actually bombed by the Germans in September, 1940, when a low-flying bomber swept in at dusk and dropped incendiary bombs round the buildings and several other bombs in the vicinity. They were all dealt with by fire-watchers without damage to the plant.—*The Gas World, London.*

Pew Gets Hanlon Award

THE Hanlon award, highest honor in the natural gasoline industry and one of the ranking merit awards in the petroleum industry, was conferred May 2 on James E. Pew, director, Natural Gas-Natural Gasoline Division, Petroleum Administration for War, Washington. The ceremony took place at the annual meeting of the board of directors of the Natural Gasoline Association of America, a meeting held in lieu of the usual national convention.

Construction Bulletin

A COMPREHENSIVE picture story of the fabrication and erection of gas holders, storage tanks, processing vessels, and other structures is contained in General Bulletin G-45 of the Stacey Bros. Gas Construction Company, Cincinnati—one of the Dresser Industries.

Available on request, the 44-page bulletin shows the company's production and erection facilities in action, and illustrates in detail many of the products such as gas holders, storage tanks, and processing equipment which Stacey Bros. builds for the gas, petroleum, chemical and food industries.

Personnel Service

SERVICES OFFERED

Sales Promotion Engineer. Graduate Engineer, with special training pertaining to gas sales and combustion of fuels; over twenty years' experience in househeating, industrial, commercial and domestic promotional sales work in the natural and manufactured gas utilities. This has covered supervision of sales, surveys, layout of equipment, installation and servicing. **1493.**

POSITIONS OPEN

Experienced **Home Service Director** to organize and supervise a combination gas and electric Home Service Department for a combination company in Ohio. Furnish full information on education, training, experience, references, age, health and photograph of self. **0414.**

Development Engineer experienced in gas appliance and gas heating equipment design. Must know A. G. A. procedure and requirements and have ability to engineer projects from inception to production. Excellent postwar opportunities with Mid-west manufacturer. **0416.**

Production Engineer for handling new products from inception through trial runs and into production. Must be familiar with and capable of setting up dies and recommending production procedures. Unlimited post-war opportunities with long established Mid-west firm manufacturing gas and oil fired water heaters and space heating equipment. **0417.**

ADVISORY COUNCIL

BURT R. BAY.....Omaha, Neb.
E. J. BOYER .....Minneapolis, Minn.
LYMAN L. DYER.....Dallas, Texas
HARRY L. GAIDRY.....New Orleans, La.
B. H. GARDNER.....Columbus, Ohio
GEORGE S. HAWLEY.....Bridgeport, Conn.
W. ALTON JONES.....New York, N. Y.
MALCOLM LEACH .....Taunton, Mass.
J. L. LLEWELLYN.....Brooklyn, N. Y.
H. N. MALLON.....Bradford, Pa.
L. A. MAYO.....Hartford, Conn.
GEORGE F. B. OWENS.....Brooklyn, N. Y.
O. H. RITENOUR.....Washington, D. C.
JOHN A. ROBERTSHAW.....Youngwood, Pa.
W. F. ROCKWELL.....Pittsburgh, Pa.
B. A. SEIPLE.....Asbury Park, N. J.
C. V. SORENSON.....Hammond, Ind.
MARCY L. SPERRY.....Washington, D. C.
R. E. WERTZ.....Amarillo, Texas
CHARLES G. YOUNG.....Springfield, Mass.

AFFILIATED ASSOCIATIONS

Association of Gas Appliance and Equipment Manufacturers
Pres.—Lyle C. Harvey, Bryant Heater Co., Cleveland, Ohio
Man. Dir.—H. Leigh Whitelaw, 60 East 42nd St., New York, N. Y.

Canadian Gas Association
Pres.—Alan H. Harris, Jr., Winnipeg Electric Co., Winnipeg, Manitoba
Exec. Sec.-Tr.—George W. Allen, 7 Astley Ave., Toronto.

Gas Meters Association of Florida-Georgia
Pres.—W. H. Duguid, Jacksonville Gas Corp., Jacksonville, Fla.
Sec.-Tr.—B. G. Duncan, Florida Power Corp., Orlando, Fla.

Illinois Public Utilities Association
Pres.—C. W. Organ, Central Illinois Light Co., Springfield, Ill.
Sec.-Tr.—T. A. Schlink, Central Illinois Light Co., Springfield, Ill.

Indiana Gas Association
Pres.—Herman G. Horstman, Public Service Co. of Indiana, Inc., Indianapolis, Ind.
Sec.-Tr.—Paul A. McLeod, Public Service Co. of Indiana, Inc., 816 Traction Terminal Building, Indianapolis 9, Ind.

Michigan Gas Association
Pres.—Henry Fink, Michigan Consolidated Gas Co., Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Michigan Consolidated Gas Co., Grand Rapids, Mich.

Maryland Utilities Association
Pres.—Henry S. Davis, Conowingo Power Co., Elkton, Md.
Sec.—Raymond C. Brehaut, Washington Gas Light Co., Washington, D. C.

Mid-Southeastern Gas Association
Pres.—J. S. Rider, Consolidated Utilities Corp., Sumter, S. C.
Sec.-Treas.—Edward W. Ruggles, North Carolina State College, Raleigh, N. C.

Mid-West Gas Association
Pres.—Burt R. Bay, Northern Natural Gas Co., Omaha, Neb.
Sec.-Tr.—Roy B. Searing, Sioux City Gas & Electric Co., Sioux City, Iowa.

Missouri Association of Public Utilities
Pres.—C. A. Semrad, St. Joseph Railway, Light, Heat and Power Co., St. Joseph, Mo.
Sec.-Tr.—N. R. Beagle, Missouri Power & Light Co., Jefferson City, Mo.
Asst. Sec.—Jesse Blythe, 103 West High St., Jefferson City, Mo.

Natural Gas and Petroleum Association of Canada
Pres.—Major E. Sweet, Brantford, Ont.
Sec.-Tr.—S. A. Morse, Union Gas Co. of Canada, Ltd., Chatham, Ont.

New England Gas Association
Pres.—D. S. Reynolds, Boston Consolidated Gas Co., Boston, Mass.
Exec. Sec.—Clark Belden, 41 Mt. Vernon St., Boston 8, Mass.

New Jersey Gas Association
Pres.—Frank H. Darlington, Peoples Gas Co., Glassboro, N. J.
Sec.-Tr.—H. A. Sutton, Public Service Electric and Gas Co., Newark, N. J.

Ohio Gas and Oil Association
Pres.—Earl F. Shadrach, Canton, Ohio
Sec.-Tr.—Frank B. Maullar, 811 First National Bank Bldg., Columbus, Ohio.

Oklahoma Utilities Association
Pres.—D. S. Kennedy, Oklahoma Gas and Electric Co., Oklahoma City, Okla.
Sec.—Kate A. Niblack, 625 Biltmore Hotel, Oklahoma City, Okla.

Pacific Coast Gas Association
Pres.—O. R. Doerr, Pacific Gas and Electric Co., San Francisco, Calif.
Man. Dir.—Clifford Johnstone, 447 Sutter St., San Francisco, Calif.

Pennsylvania Gas Association
Pres.—Louis C. Smith, Harrisburgh Gas Co., Harrisburg, Pa.
Sec.—William Naile, Lebanon Valley Gas Co., Lebanon, Pa.

Pennsylvania Natural Gas Men's Association
Pres.—Dan S. Keenan, Carnegie Natural Gas Co., Pittsburgh, Pa.
Exec. Sec.—Mark Shields, 2619 Grant Bldg., Pittsburgh, Pa.

Southern Gas Association
Pres.—Frank S. Kelly, Jr., Arkansas Louisiana Gas Co., Shreveport, La.
Sec.-Tr.—L. L. Baxter, Arkansas Western Gas Co., Fayetteville, Ark.

Wisconsin Utilities Association
Pres.—M. H. Montross, Wisconsin Public Service Corp., Wausau, Wis.
Exec.-Sec.—A. F. Herwig, 135 West Wells St., Milwaukee, Wis.

AMERICAN GAS ASSOCIATION

HEADQUARTERS, 420 LEXINGTON AVE., NEW YORK 17, N. Y.

OFFICERS AND DIRECTORS

President	J FRENCH ROBINSON	Cleveland, Ohio
First Vice-President	E. J. BOOTHBY	Washington, D. C.
Second Vice-President	R. H. HARGROVE	Shreveport, La.
Treasurer	EDWARD F. BARRETT	Mineola, N. Y.
Assistant Treasurer	V. T. MILES	Mineola, N. Y.
Managing Director	ALEXANDER FORWARD	New York, N. Y.
Assistant Managing Director	J. W. WEST, JR.	New York, N. Y.
Assistant Managing Director	GEORGE H. SMITH	New York, N. Y.
Secretary	KURWIN R. BOYES	New York, N. Y.
Sectional Vice-Pres.	C. E. PACKMAN	Chicago, Ill.
Sectional Vice-Pres.	HARRY K. WRENCH	Minneapolis, Minn.
Sectional Vice-Pres.	FRANK J. HOENIGMANN	Chicago, Ill.
Sectional Vice-Pres.	J. H. WARDEN	Tulsa, Okla.
Sectional Vice-Pres.	L. E. KNOWLTON	Providence, R. I.

ERNEST R. ACKER	Poughkeepsie, N. Y.	D. A. HULCY	Dallas, Texas
F. M. BANKS	Los Angeles, Calif.	NORTON McKEAN	Albany, N. Y.
R. G. BARNETT	Portland, Ore.	E. P. NOPPEL	New York, N. Y.
JOHN W. BATTEN	Detroit, Mich.	BRUNO RAHN	Milwaukee, Wis.
WALTER C. BECKJORD	New York, N. Y.	HUDSON W. REED	Philadelphia, Pa.
ARTHUR F. BRIDGE	Los Angeles, Calif.	HERMAN RUSSELL	Rochester, N. Y.
JAMES A. BROWN	New York, N. Y.	LOUIS RUTHENBURG	Evansville, Ind.
CHARLES M. COHN	Baltimore, Md.	T. J. STRICKLER	Kansas City, Mo.
N. R. FELTES	LaPorte, Ind.	E. J. TUCKER	Toronto, Ontario
RALPH L. FLETCHER	Providence, R. I.	H. CARL WOLF	Atlanta, Ga.
D. W. HARRIS	Shreveport, La.	P. S. YOUNG	Newark, N. J.
LYLE C. HARVEY	Cleveland, Ohio		

DEPARTMENT OFFICERS

MANUFACTURED GAS DEPARTMENT

Chairman—E. J. Boothby, Washington, D. C.
Secretary—A. Gordon King, New York, N. Y.

NATURAL GAS DEPARTMENT

Chairman—R. H. Hargrove, Shreveport, La.
Director—George H. Smith, New York, N. Y.

SECTION OFFICERS

ACCOUNTING

Chairman—C. E. Packman, Chicago, Ill.
Vice-Chairman—E. F. Embree, New Haven, Conn.
Secretary—O. W. Brewer, New York, N. Y.

RESIDENTIAL GAS

Chairman—J. H. Warden, Tulsa, Okla.
Vice-Chairman—J. J. Quinn, Boston, Mass.
Secretary—F. W. Williams, New York, N. Y.

INDUSTRIAL AND COMMERCIAL GAS

Chairman—Harry K. Wrench, Minneapolis, Minn.
Vice-Chairman—Harry A. Sutton, Newark, N. J.
Secretary—Eugene D. Milener, New York, N. Y.

TECHNICAL

Chairman—L. E. Knowlton, Providence, R. I.
Vice-Chairman—Lester J. Eck, Minneapolis, Minn.
Secretary—A. Gordon King, New York, N. Y.

MANUFACTURERS

Chairman—Frank J. Hoenigmann, Chicago, Ill.

PUBLICITY AND ADVERTISING COMMITTEE

Chairman—C. A. Tattersall, New York, N. Y.
Secretary—George A. McDonald, New York, N. Y.

COMMITTEE ON NATIONAL ADVERTISING

Chairman—H. Carl Wolf, Atlanta, Ga.
Secretary—Charles W. Person, New York, N. Y.

A. G. A. TESTING LABORATORIES—1032 East 62nd Street, Cleveland 14, Ohio
1425 Grande Vista Avenue, Los Angeles, Calif.

Chairman, Managing Committee	GEORGE E. WHITWELL	Philadelphia, Pa.
Director	R. M. CONNER	Cleveland, Ohio
Supervisor, Pacific Coast Branch	W. H. VOGAN	Los Angeles, Calif.

WASHINGTON OFFICE:

George W. Bean, Fuel Consultant, Albee Bldg., Washington 5, D. C.

PRINTED IN U. S. A.